



ORDER NO. SDT-151



NATIONAL

Service Manual

3-BAND 20-TRANSISTOR 16-DIODE AC/BATTERY POWERED RADIO-PHONOGRAPH WITH CASSETTE TAPE RECORDER

MODEL **SG-149F**



SPECIFICATIONS

Frequency Range:	FM 87.5 ~ 108 MHz (3.43 ~ 2.78 m) AM 525 ~ 1605 kHz (571 ~ 187 m) SW 5.9 ~ 18 MHz (50.8 ~ 16.6 m) [SW 3.9 ~ 12 MHz (77 ~ 25 m) ... SA]		
Intermediate Frequency:	FM 10.7 MHz AM 455 kHz		
Transistors:	2SC921 FM RF Amplifier 2SC920 FM Converter 2SC829 FM 1st IF Amp. & AM Converter 2SC829 FM 2nd IF Amp. & AM 1st IF Amp. 2SC829 FM 3rd IF Amp. & AM 2nd IF Amp. 2SC346 1st AF Amplifier 2SC828 2nd AF Amplifier 2SB405 Power Output 2SD72 Power Output 2SB346 Equalizer Pre-amp. 2SB175 Equalizer Pre-amp. 2SB175 Equalizer Amp. (two) 2SB175 AC Bias Oscillator 2SB324 AC Bias Power Amp. 2SB175 Level Meter Amp. 2SC828 Motor Governor Control (two) 2SB324 Motor Governor Control (two)	Thermistors:	0A90 AM Det. & AGC 1S1211 AOC (seven) 10D-1 AC/Battery Switching 10D-1 AC Lamp Switching 10DC-1R Rectifier MT-10K Temperature Compensator ERT-D3FBK350S Temperature Compensator
Diodes:	0A90 FM Forward AGC 0A90 FM Discriminator (two) 0A90 FM Meter Det. 0A90 FM D. AGC	Sensitivity:	FM 2 μ V/m/50mW MW 100 μ V/m/50mW SW 50 μ V/m/50mW
		Power Output:	2W (Maximum)
		Power Source:	AC 110V, 125V, 210V, 240V, 50 ~ 60Hz
		Batteries	Six "D" size flashlight batteries (9V) (NATIONAL UM-1 or equivalent)
		Speakers:	10 cm PM Dynamic 4 Ω 6.5 cm PM Dynamic 8 Ω
		Pickup:	EPU-65LTC with cartridge
		Cartridge:	EPC-70LTC with stylus, Ceramic
		Stylus:	EPS-04LP
		Phonomotor:	FF-553D (9V) 2 Speed DC Phonomotor Transistorized Governor Controlled
		Record/Playback Head:	WY-027Z
		Erase Head:	WY-235X
		Cassette Motor:	MHE-5SD9S2 (DC 9V)
		Cabinet Dimensions:	373 (W) x 154 (D) x 324 (H) mm (14-11/16) (6-1/16") (12-3/4")
		Weight:	6.1 kg. (13 lb. 7 oz.) without batteries

<EXPORT DIVISION>

MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288, Central Osaka, Japan

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
RADIO and STEREO DIVISION

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PARTS IDENTIFICATION

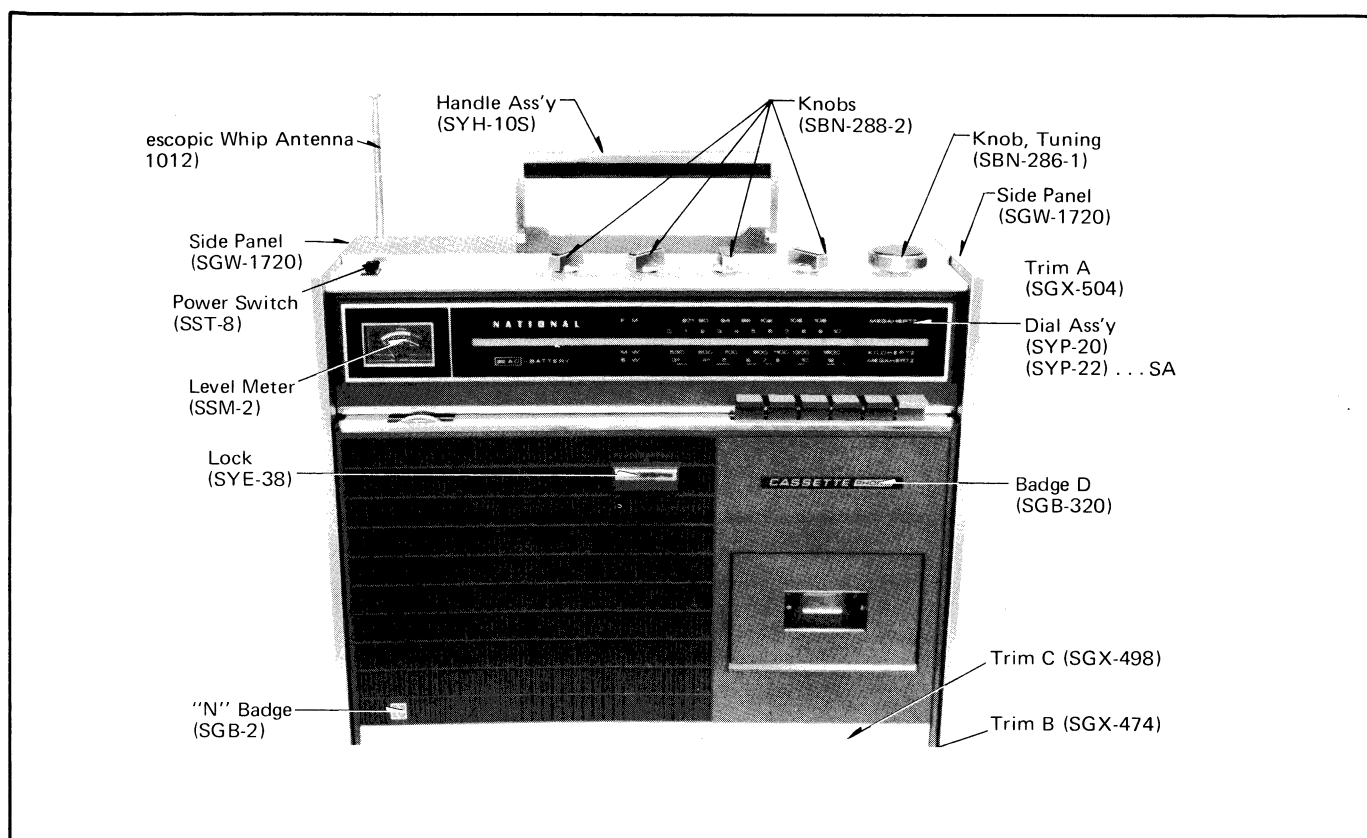


Fig. 1 FRONT VIEW

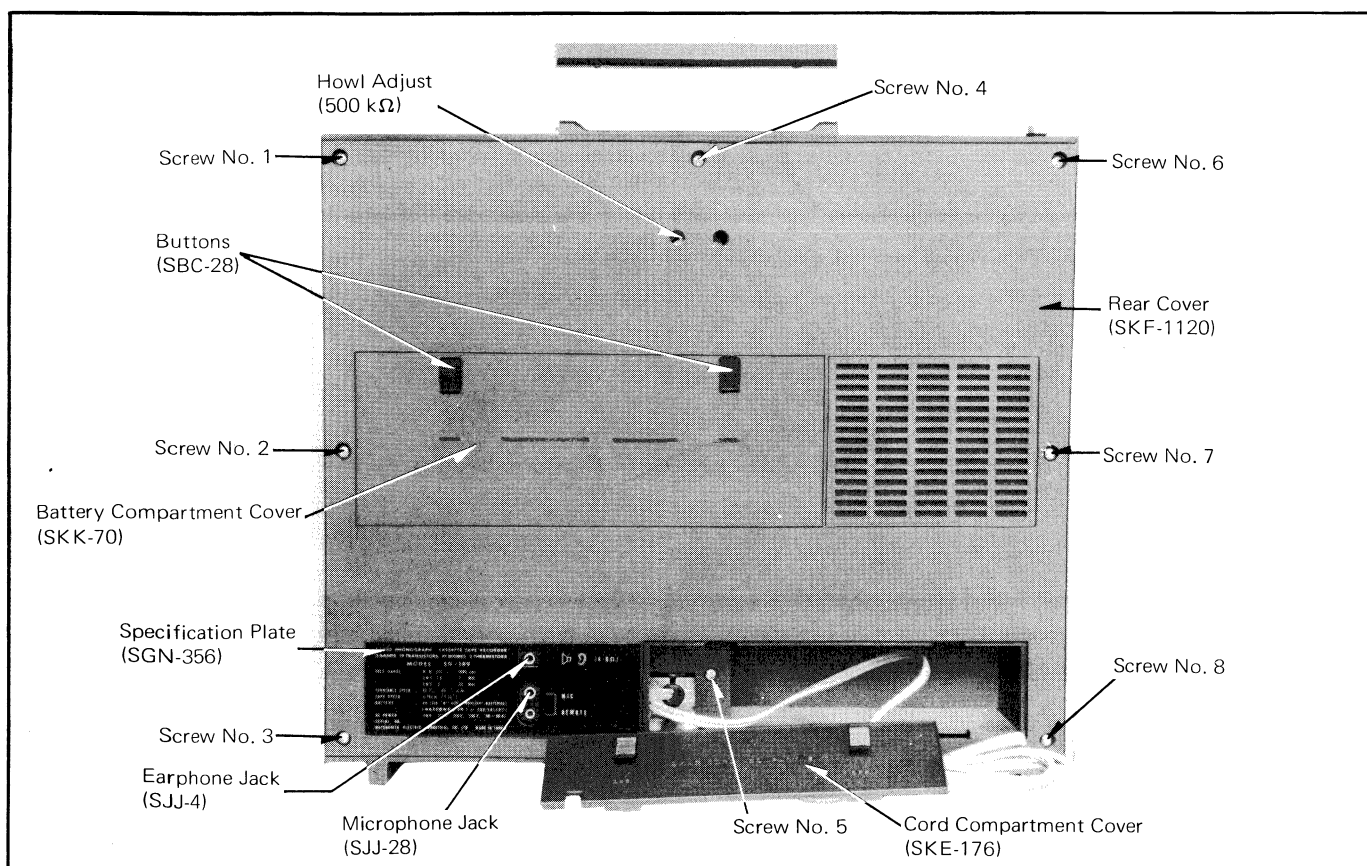


Fig. 2 REAR VIEW

PARTS IDENTIFICATION

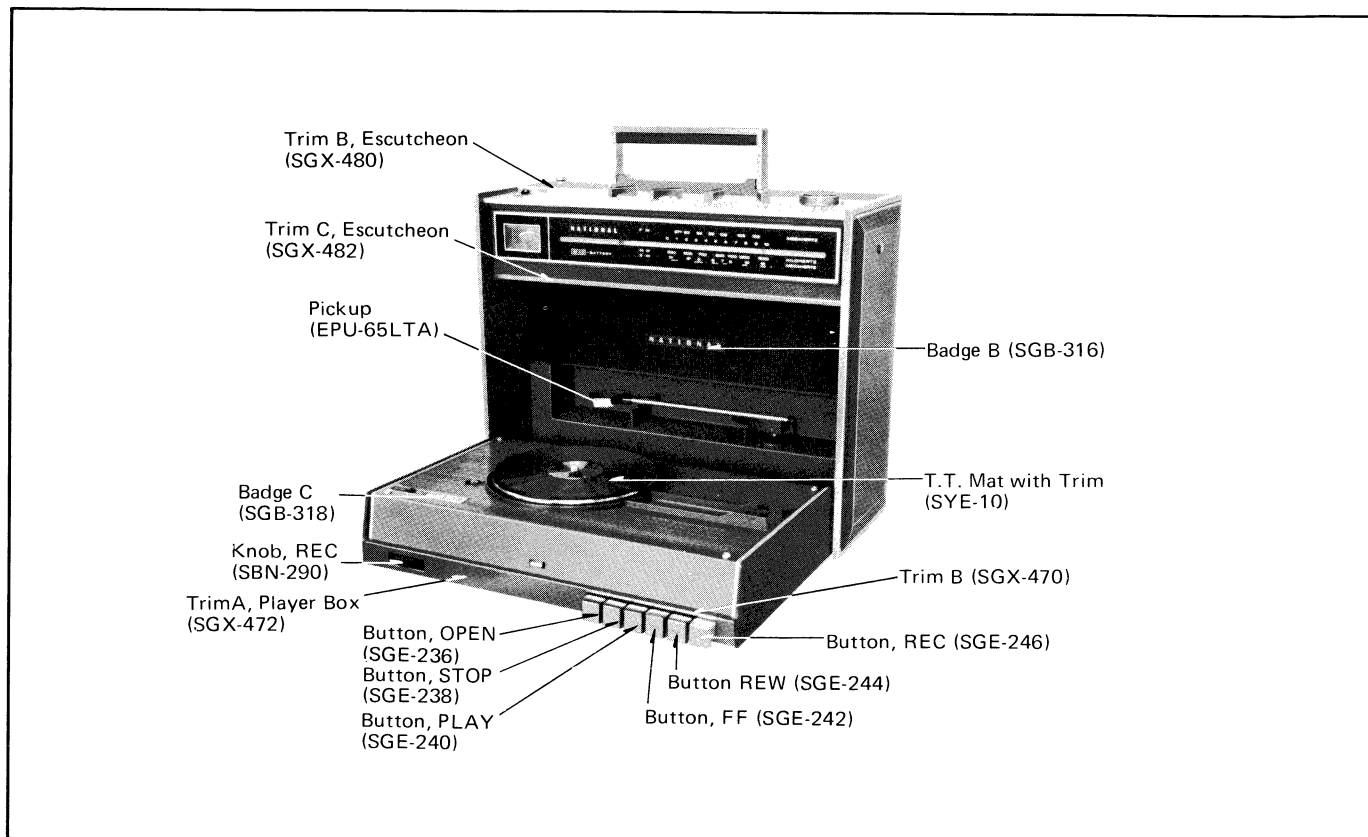


Fig. 3 FRONT VIEW WITH PLAYER BOX OPEN

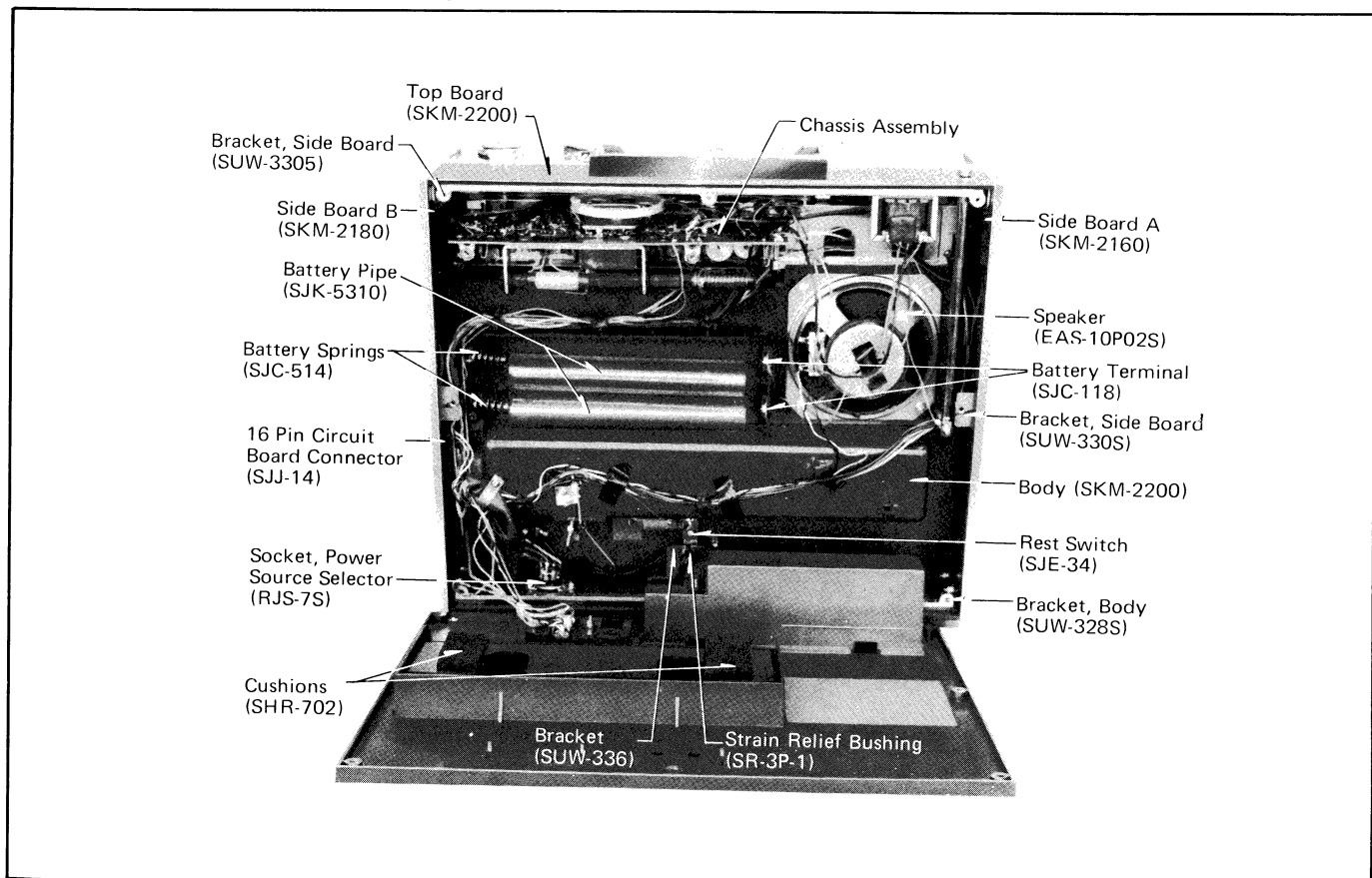


Fig. 4 REAR VIEW WITH REAR COVER OPEN

PARTS IDENTIFICATION

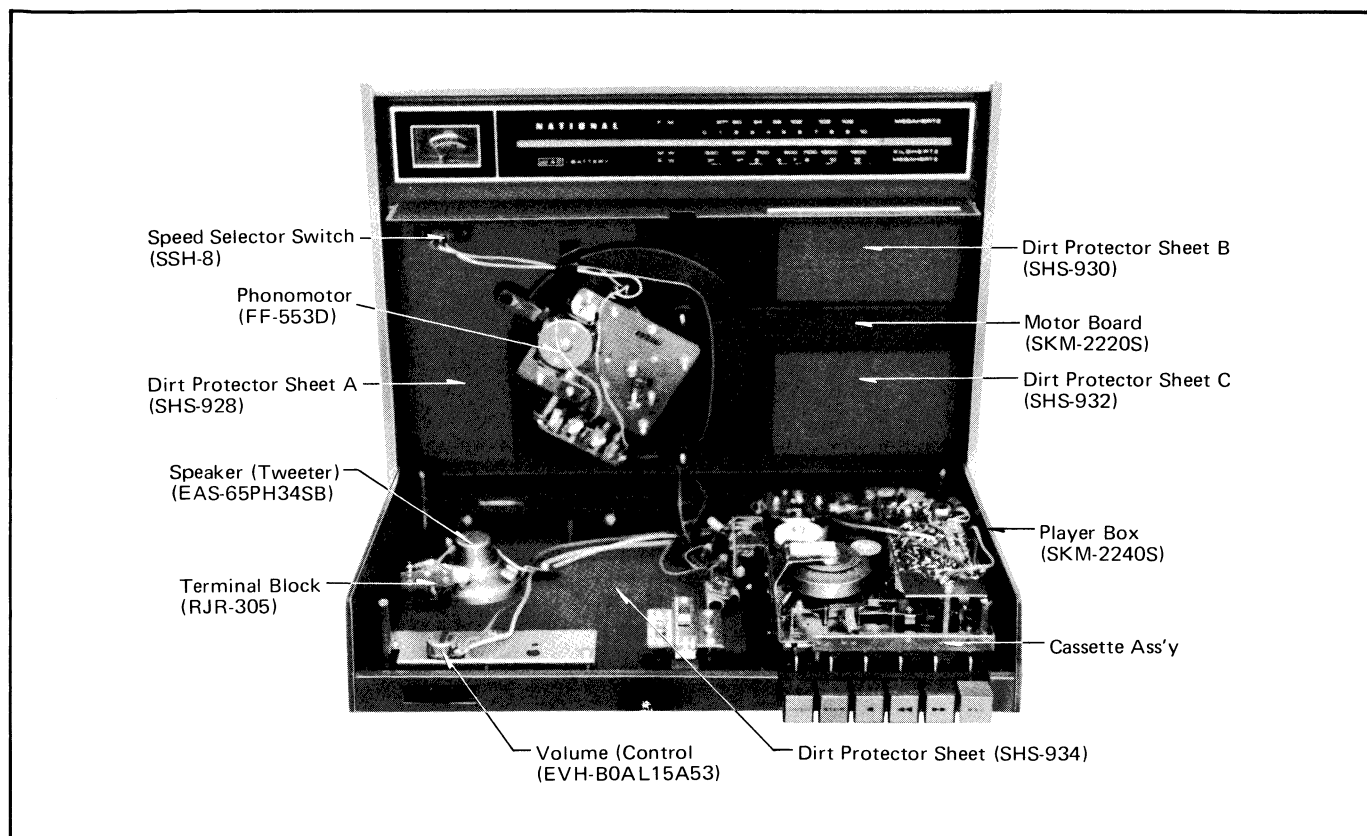


Fig. 5 FRONT VIEW WITH MOTOR BOARD OPEN

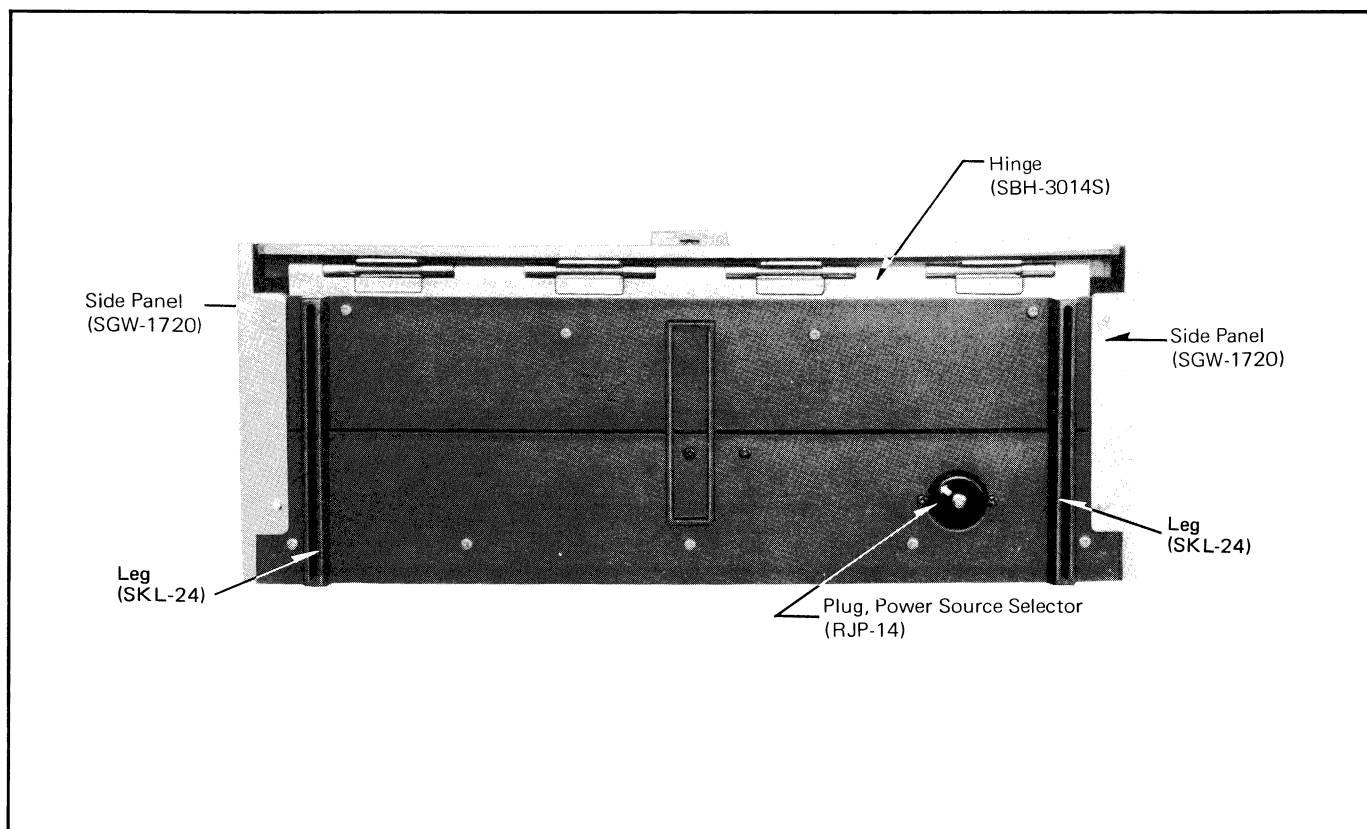


Fig. 6 BOTTOM VIEW

PARTS IDENTIFICATION

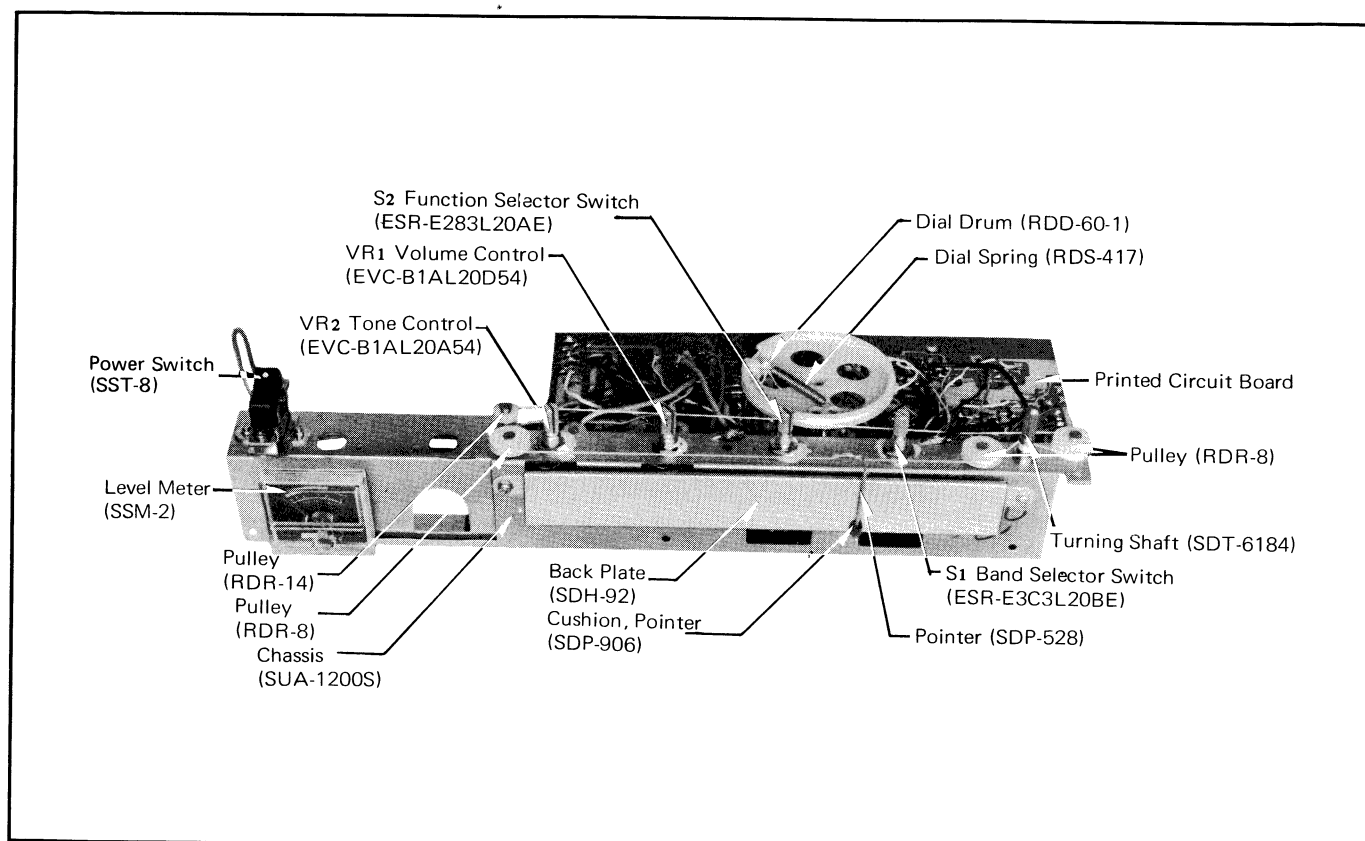


Fig. 7 CHASSIS

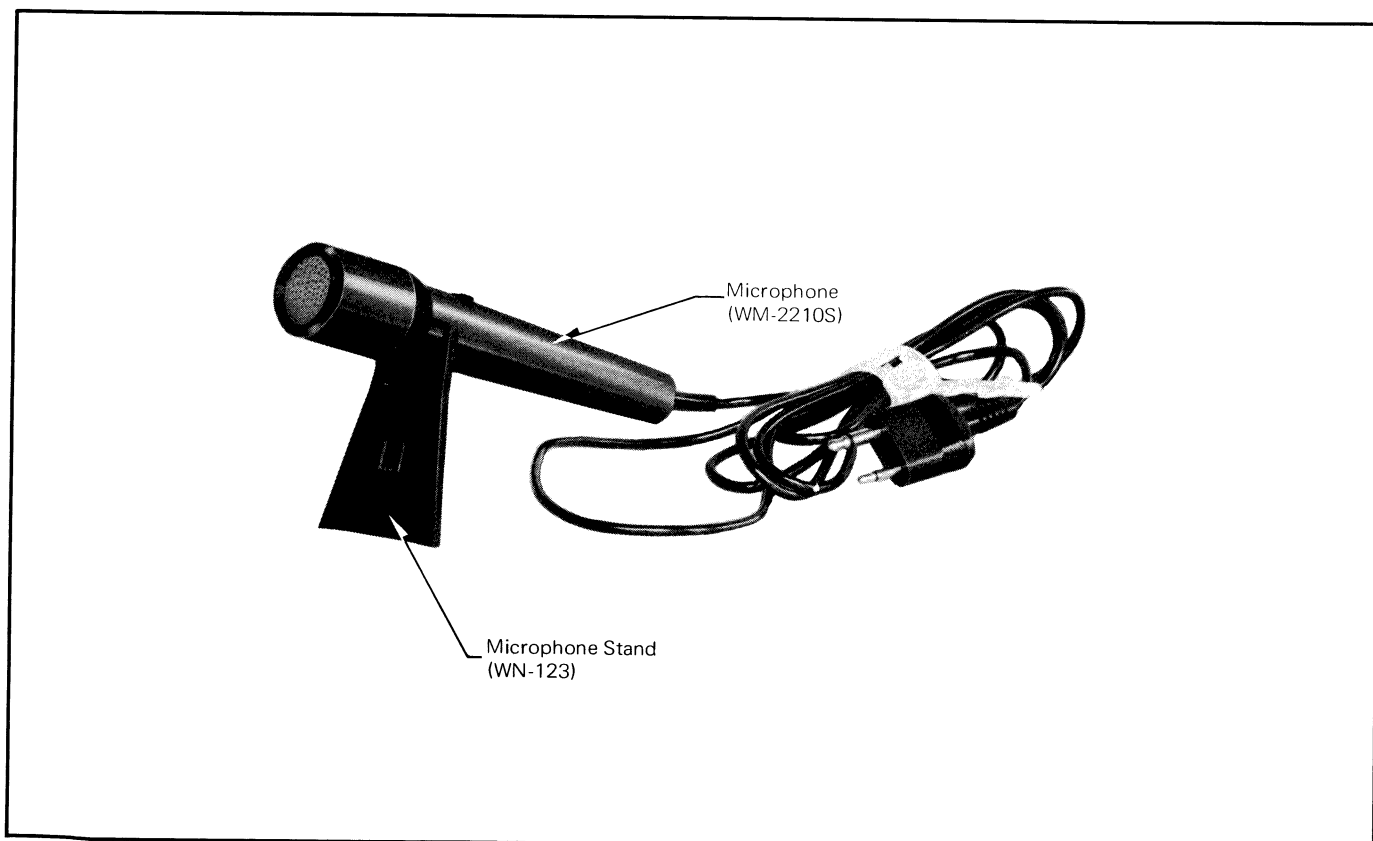


Fig. 8 MICROPHONE & STAND

DISASSEMBLY INSTRUCTIONS

To Remove Chassis (Refer to Figs. 2, 9 & 10)

1. Remove eight (8) rear cover mounting screws, Nos. 1-8 as shown in Fig. 2 on page 2.
2. Remove three (3) escutcheon mounting screws, Nos. 1-3 as shown in Fig. 9.
3. Remove five (5) knobs from escutcheon.
4. Remove two (2) chassis mounting screws, Nos. 1-2, as shown in Fig. 10.
5. To remove chassis completely, remove six (6) chassis mounting screws Nos. 3-8 from escutcheon, as shown in Fig. 10.

Pull out 16 pin circuit board connector from circuit board connecting board (SUP-2320) and remove microphone jack, earphone jack.

Then unsolder ten (10) lead wires to speaker (black), battery terminal (red), telescopic whip antenna (orange), power source selector socket (red, green, blue & yellow), battery spring (black), rest switch (black) and terminal (black).

6. To reassemble, reverse above procedure.

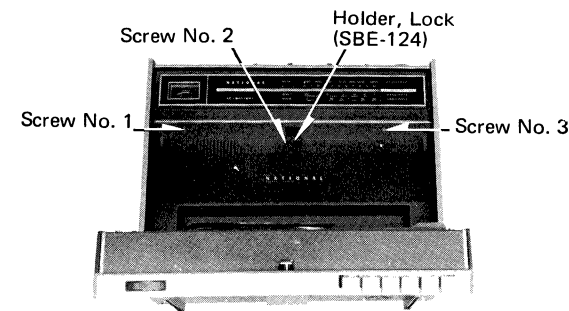


Fig. 9

To Remove Speaker (Refer to Figs. 2 & 10)

1. Remove eight (8) rear cover mounting screws, Nos. 1-8 as shown in Fig. 2 on page 2.
2. Remove four (4) speaker mounting nuts, Nos. 1-4 as shown in Fig. 10.
3. Unsolder two (2) lead wires (white & black).
4. To reassemble, reverse above procedure.

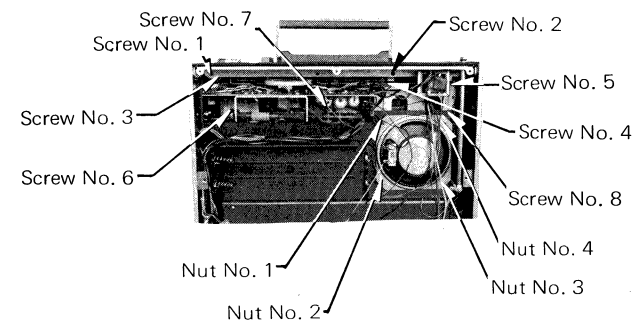


Fig. 10

DISASSEMBLY INSTRUCTIONS

To Remove Phonomotor (Refer to Figs. 11 & 12)

1. Remove turntable mat and circlip from turntable.
2. Remove six (6) motor board mounting screws, Nos. 1-6 as shown in Fig. 11.
3. Remove four (4) phonomotor mounting nuts, Nos. 1-4 as shown in Fig. 12.
4. Unsolder five (5) lead wires to switch (blue, yellow & white) and governor circuit (orange & red).
5. To reassemble, reverse above procedure.

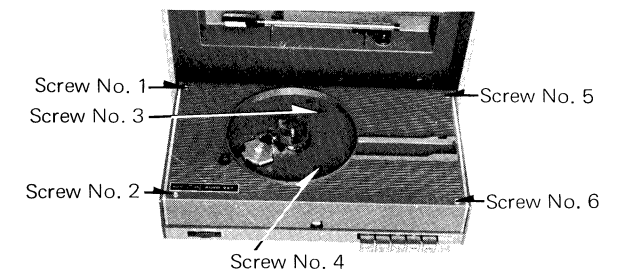


Fig. 11

To Remove Cassette Tape Deck (Refer to Figs. 11 & 12)

1. Remove six (6) motor board mounting screws, Nos. 1-6 as shown in Fig. 11.
2. Remove two (2) cassette tape deck mounting screws Nos. 1-2 and the stud as shown in Fig. 12.
3. To remove cassette tape deck completely, unsolder eight (8) lead wires to circuit connecting board (grey, grey brown, orange & green), level control (grey & brown) and terminal block (green).
4. To reassemble, reverse above procedure.

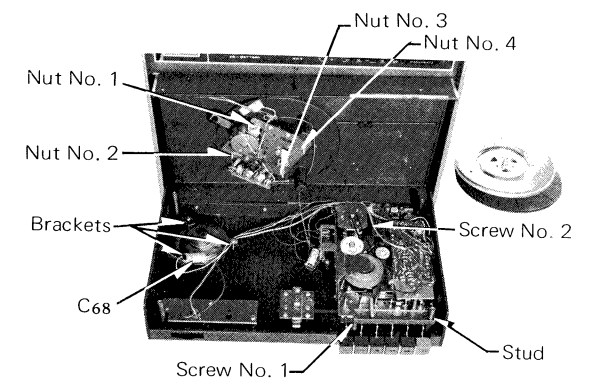


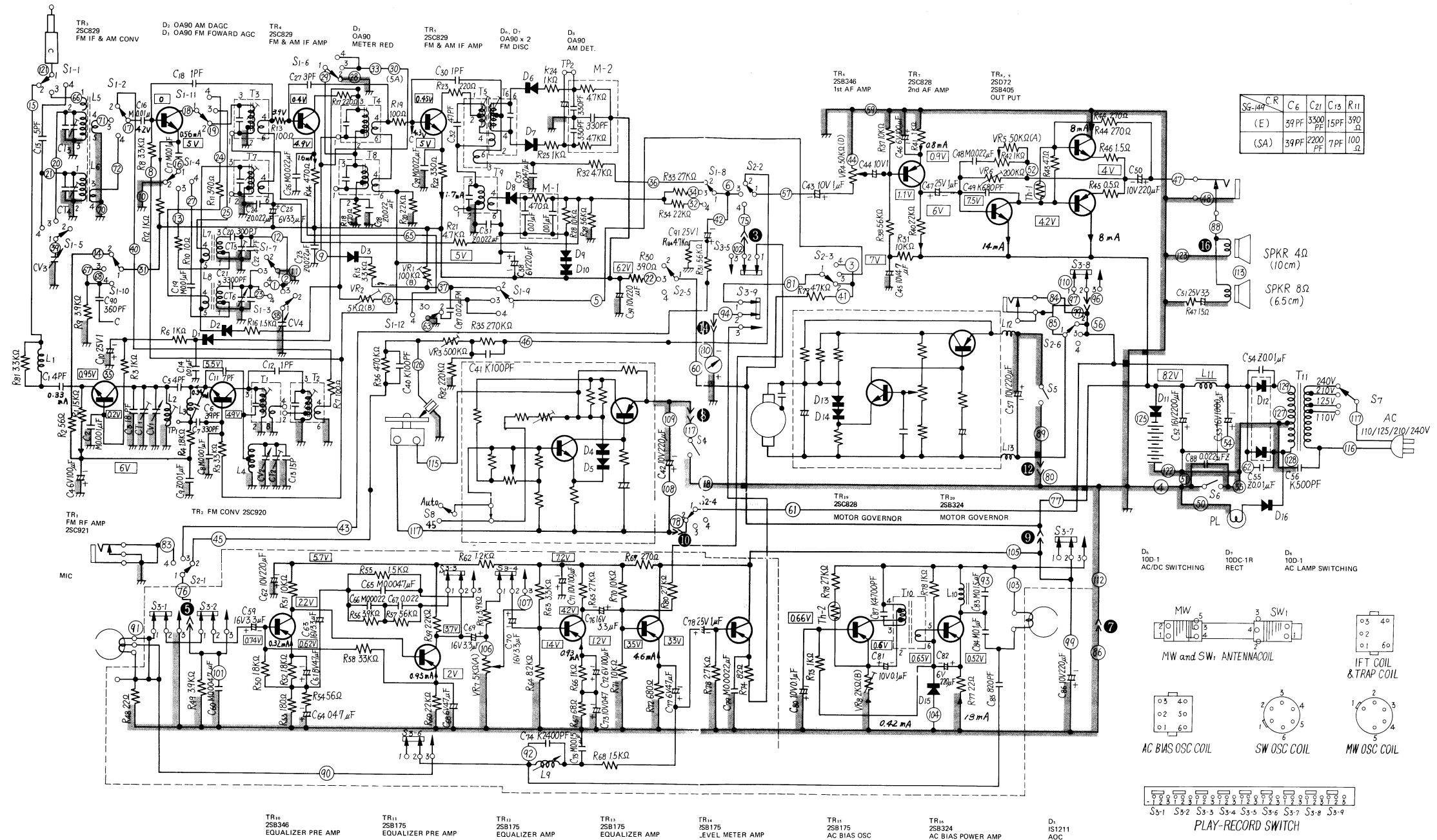
Fig. 12

To Remove Tweeter (Refer to Figs. 11 & 12)

1. Remove six (6) motor board mounting screws, Nos. 1-6 as shown in Fig. 11.
2. Remove three (3) tweeter mounting brackets, as shown in Fig. 12.
3. Unsolder lead wire to circuit connecting board (black) and capacitor (C68) to terminal block.
4. To reassemble, reverse above procedure.

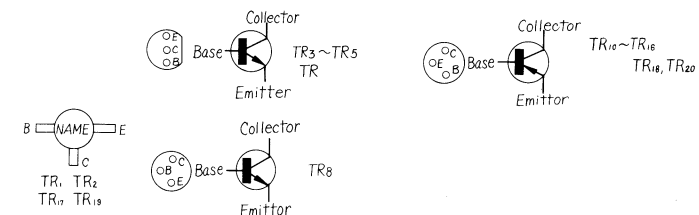


SCHEMATIC DIAGRAM MODEL SG-149F



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- Notes: 1. S1-1 ~ S1-9 : Band Selector Switch in "FM" Position
2. S2-1 ~ S2-9 : Function Selector Switch in "PHONO" Position
3. S3-1 ~ S3-9 : Tape Selector Switch in "PLAYBACK" Position
4. S4 : Phono motor ON-OFF Switch in "OFF" Position
5. S5 : Tape motor ON-OFF Switch in "OFF" Position
6. S6 : Power Source Switch in "OFF" Position
7. S7 : Voltage Adjuster in "240V" Position
8. DC voltages are to be measured by means of vacuum tube voltmeter under no signal condition. Measured DC voltages should show negative polarity to ground.
9. Battery Current : Phono motor No load 40 mA
Tape motor 55 mA
Radio No load 30 mA
MAX Power 270 mA



NATIONAL RADIO PHONOGRAPH

CIRCUIT BOARD AND ALIGNMENT POINTS (RADIO)

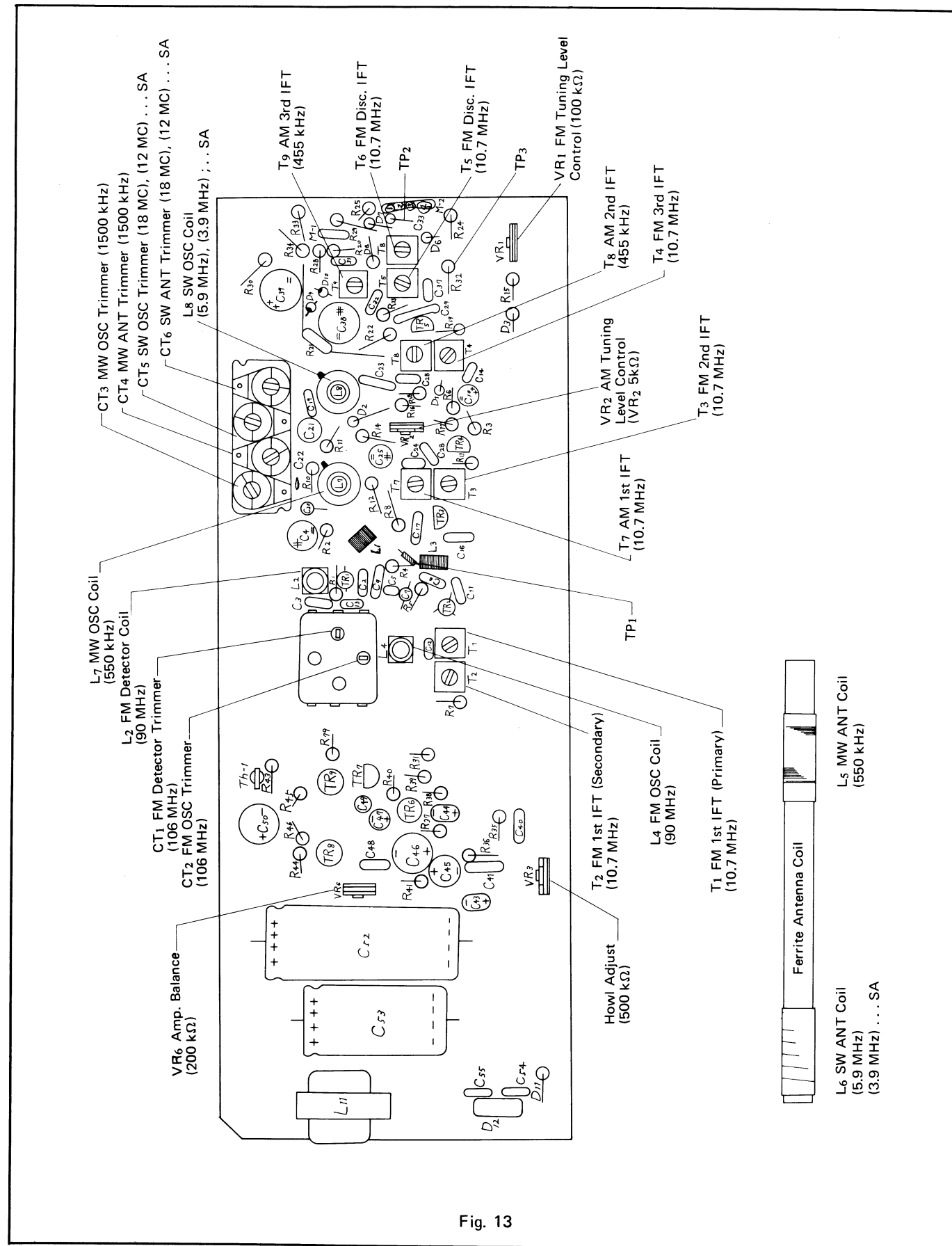


Fig. 13

CIRCUIT BOARD AND ALIGNMENT POINT (TAPE RECORDER)

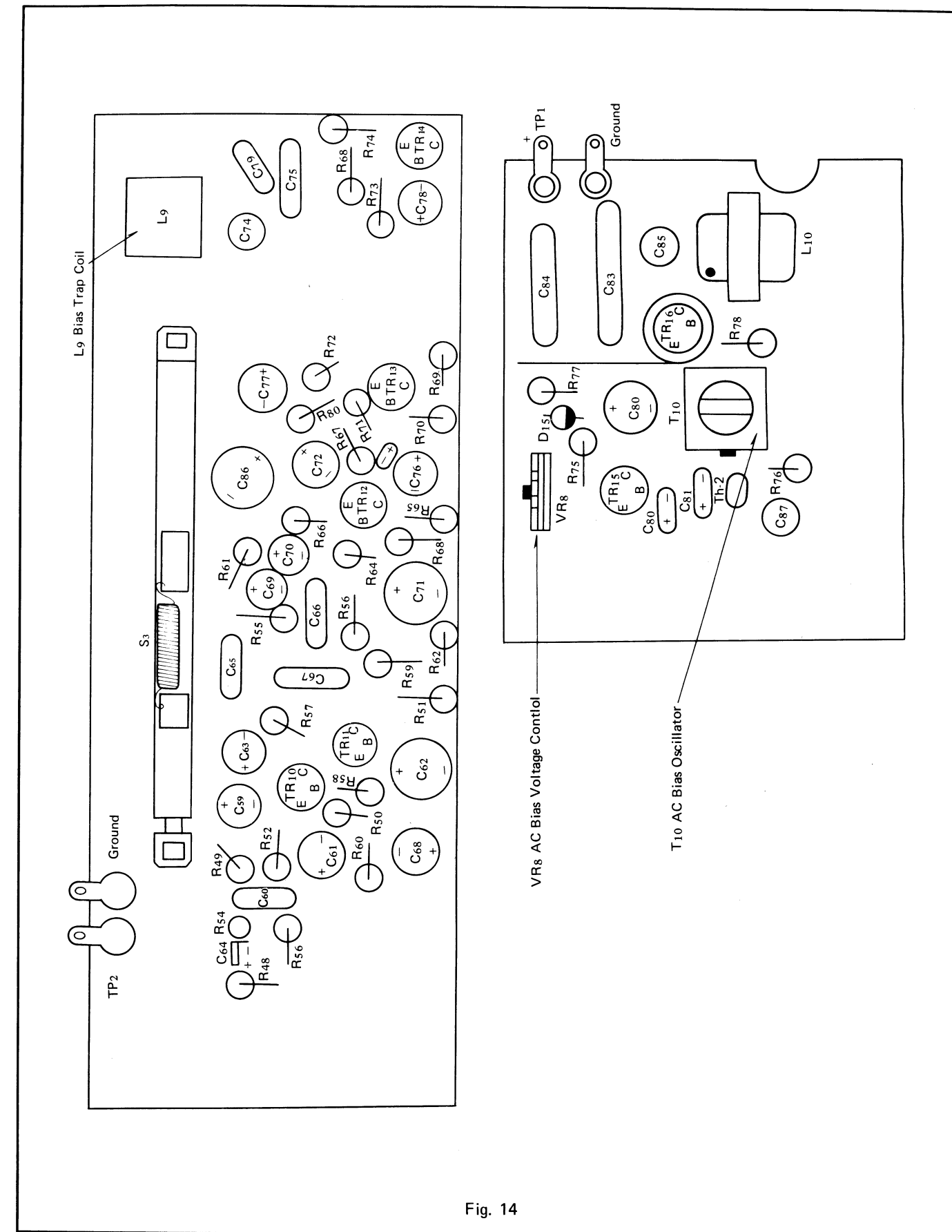


Fig. 14

ALIGNMENT INSTRUCTIONS (RADIO)

FREQUENCY & DISTANCE ON DIAL

To accurately align the proper frequencies to the dial, refer to table and mark the edge of the dial accordingly using the "Start Point" mark on the dial as a reference point.

Table

Band	Frequency	Distance from "Start Point"
FM	90 MHz	18.6 mm
	106 MHz	69.4 mm
MW	550 MHz	9.8 mm
	1500 kHz	63.3 mm
SW	5.9 MHz	4 mm
	18 MHz	89.2 mm
SW(SA)	3.9 MHz	4 mm
	12 MHz	89.2 mm

IF & RF ALIGNMENT (Refer to Fig. 13)

Output of signal generator should be no higher than necessary to obtain an output reading.
Set function selector switch to RADIO.
Set band selector switch to MW and SW
Set volume control to maximum.
Set tone control to high.
Set power source voltage to 9 volts DC.

STEP	BAND	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz (400 ~ Mod.)	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil terminal.	T7 (1st I.F.T) T8 (2nd I.F.T) T9 (3rd I.F.T)	Adjust for maximum output.
2	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz (400 ~ Mod.)	550 kHz	Output meter across voice coil terminal.	L7 (OSC Coil) L5 (ANT Coil)	Adjust for maximum output by sliding coil (L5) along ferrite core.
3	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500 kHz (400 ~ Mod.)	1500 kHz	Output meter across voice coil terminal.	CT3 (OSC Trimmer) CT4 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3)
4	SW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	5.9 MHz 3.9 MHz (SA) (400 ~ Mod.)	5.9 MHz 3.9 MHz (SA)	Output meter across voice coil terminal.	L8 (OSC Coil) L6 (ANT Coil)	Adjust for maximum output by sliding coil (L6) along ferrite core.
5	SW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	18 MHz 12 MHz (SA) (400 ~ Mod.)	18 MHz 12 MHz (SA)	Output meter across voice coil terminal.	CT5 (OSC Trimmer) CT6 (ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).

Note: Cement antenna bobbin with wax after completing alignment.

ALIGNMENT INSTRUCTIONS (RADIO)

FM IF & DETECTOR ALIGNMENT WITH OSCILLOSCOPE (Refer to Fig. 13)

OSCILLOSCOPE

Set sweep selector of oscilloscope to "External Sweep". Apply 60 ~ sweep signal from sweep generator to horizontal input terminals of oscilloscope.

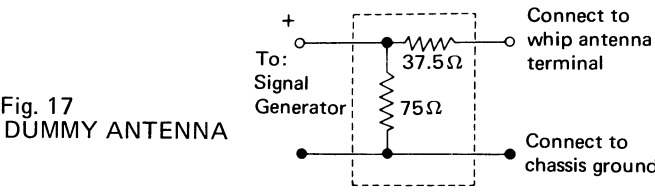
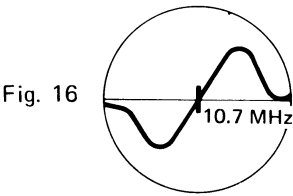
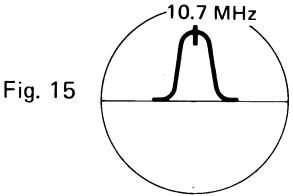
EQUIPMENT REQUIRED

Signal generator that provides 10.7 MHz marker.
Sweep generator that provides 10.7 MHz center frequency and 400 kHz sweep width.
Set band selector switch to FM.
Set volume control to minimum.
Set tone control to high.
Set power source voltage to 9 volts DC.

Note: When aligning step 1, unsolder lead of test point TP3 before alignment and resolder it after alignment.

STEP	SWEEP GENERATOR COUPLING	SIGNAL GENERATOR COUPLING	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	High side thru. .001 mfd to point TP1 Common to chassis.	High side thru. .001 mfd to point TP1 Common to chassis.	Point of non-interference. (on/about 98 MHz)	Connect vert. Amp. of scope to point TP2 Common to chassis	T1 (FM 1st IFT) T2 (FM 1st IFT) T3 (FM 2nd IFT) T4 (FM 3rd IFT)	Adjust for maximum amplitude and proper linearity between 100 kHz markers. (Refer to Fig. 15)
2	High side thru. .001 mfd to point TP1 Common to chassis.	High side thru. .001 mfd to point TP1 Common to chassis.	Point of non-interference. (on/about 98 MHz)	Connect vert. Amp of scope to point TP3 chassis.	T5 (FM Disc. IFT) T6 (FM Disc. IFT)	Adjust T6 so that 10.7 MHz marker appears at the center. (Refer to Fig. 16)

Note: When aligning the Ratio Detector stage, the wave form may appear as in Figs. 15 & 16 or upside-down.

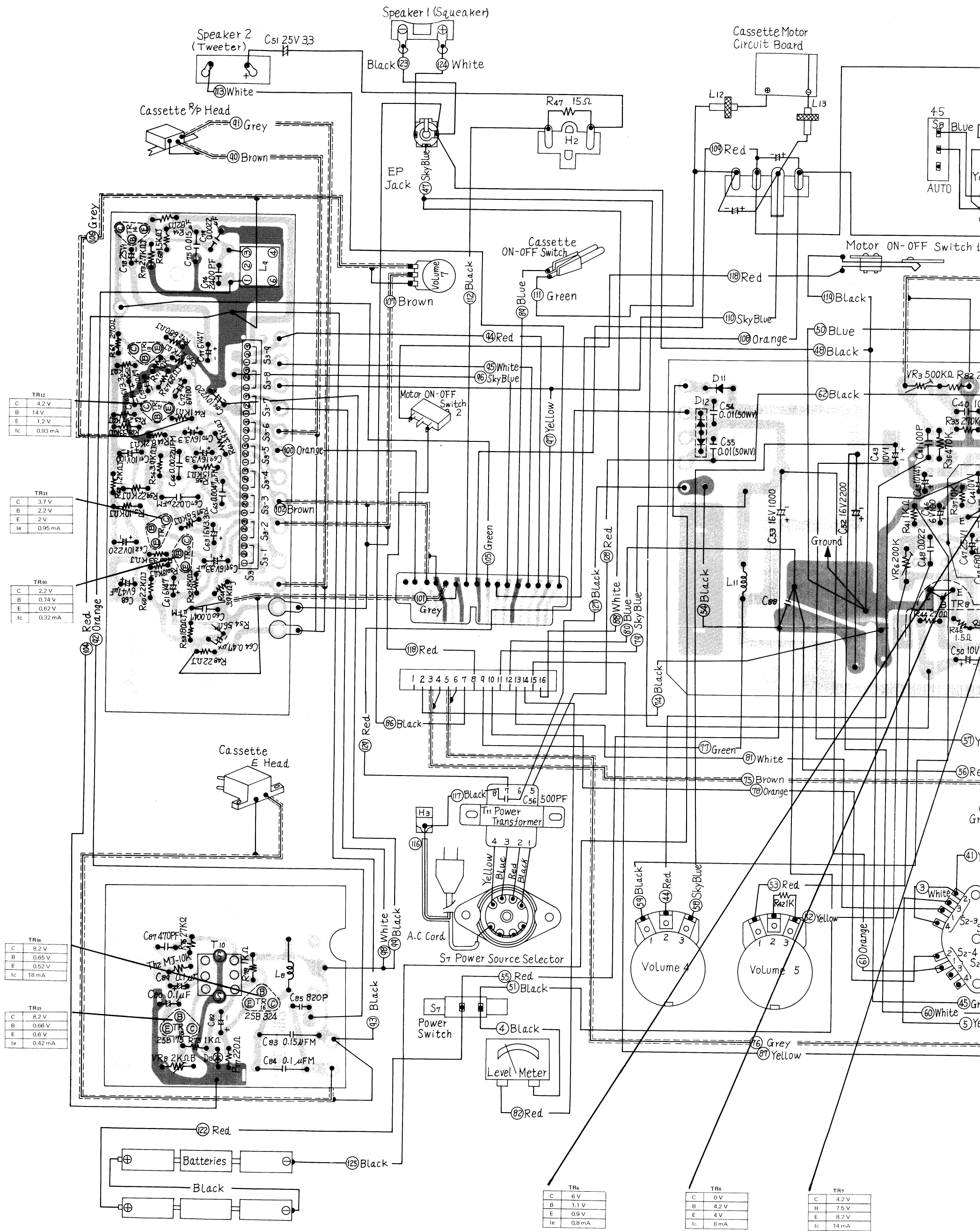


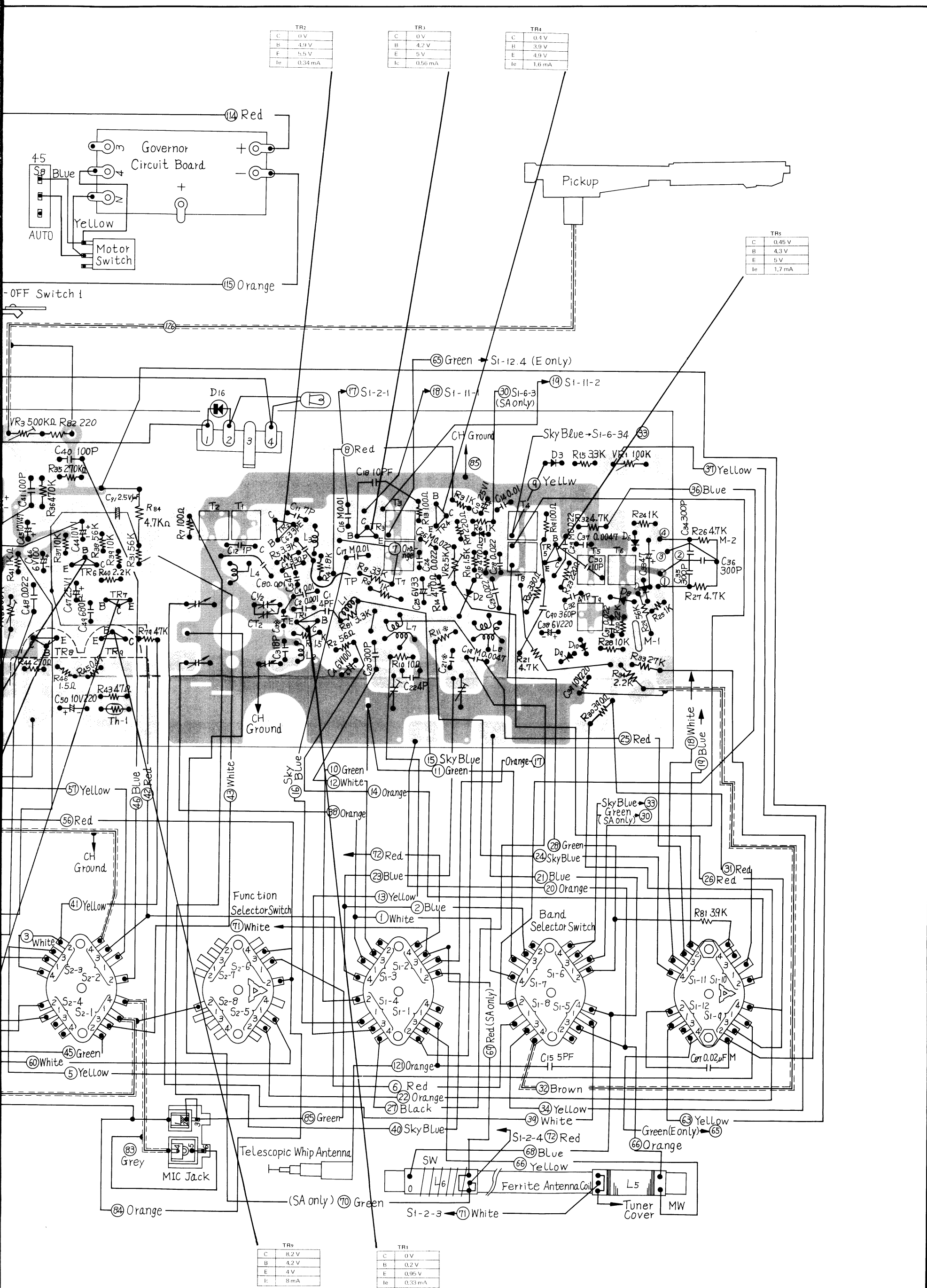
FM RF ALIGNMENT (Refer to Fig. 13)

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum.
Set band selector switch to FM.
Set tone control to High.
Set power source voltage to 9 volts DC.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
3	Connect to "FM" antenna terminal through dummy antenna. Common to chassis.	90 MHz (40 Mod.)	90 MHz	Output meter across voice coil terminal	L4 (FM OSC Coil) L2 (FM Detector Coil)	Adjust for maximum output.
4	Connect "FM" antenna terminal through dummy antenna. Common to chassis.	106 MHz (400 Mod.)	106 MHz	Output meter across voice coil terminal	CT2 (FM OSC Trimmer) CT1 (FM Detector Trimmer)	Adjust for maximum output. Repeat steps. (3) and (4)

Note: As three output responses will be present, proper tuning is the center frequency.





NATIONAL RADIO PHONOGRAPH

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NOTES

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ADJUSTMENT OF LEVEL METER (Refer to Fig.13)

SELECTOR SWITCH POSITION	ADJUST	REMARKS
PH ↓ FM ↓ MW	VR1 (100k Ω) VR2 (5k Ω)	1. Set power source voltage to 9 volts DC. 2. Set function selector switch to PH and turn to FM, MW (SW₁ & SW₂). 3. No-signal condition. 4. Adjust VR₁ (100kΩ) at FM position so that the pointer of the level meter points same position as shown at PH. 5. Adjust VR₂ (5kΩ) at MW so that the pointer of the level meter points to same position as shown at PH.

Note: Short No. 13 pin of 16 pin circuit board connector and position No. 14 pin before alignment.

Battery Check

Level meter shows when batteries have to be replaced. Set function selector switch to PH. If pointer of level meter is seen in the red area, set will operate normally. When pointer is seen in the other area, batteries must be replaced.

Tuning

Level meter may be used for correct tuning in MW, SW and FM reception. Pointer moves to left when station is correctly tuned in.

Maximum swing shows correct tuning.

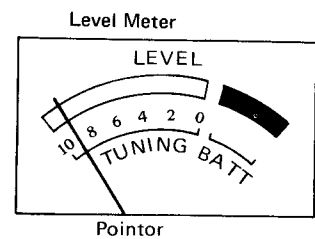
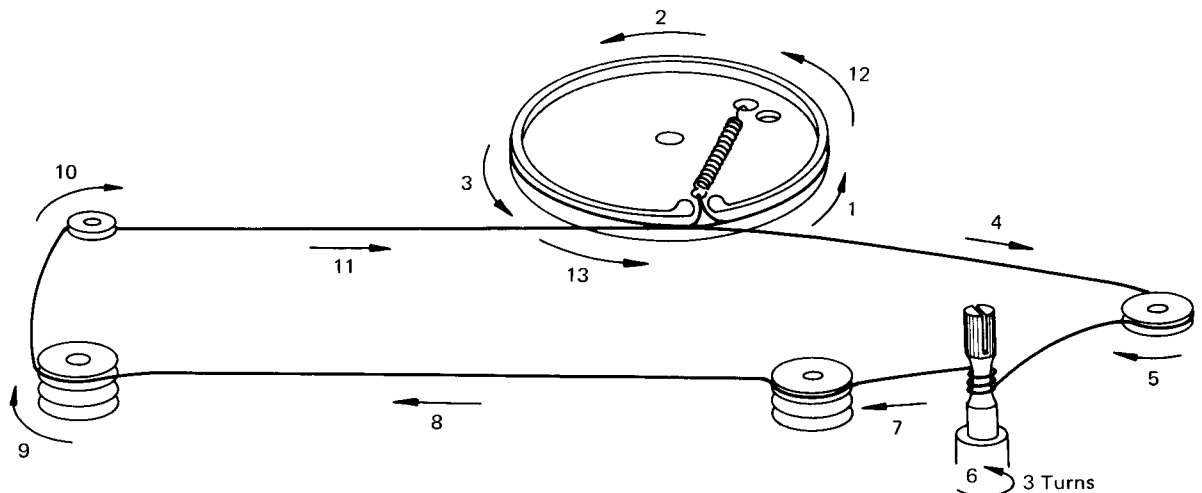


Fig. 18

DIAL CORD STRINGING GUIDE



Notes:

1. Tuning capacitor should be positioned at maximum capacity.
2. Numbered arrows (1-13) indicate correct order of stringing dial cord.
3. Cement dial cord ends.

To Mount Dial Pointer

1. Set tuning capacitor to fully closed position.
2. Set dial pointer to starting point.
3. Attach dial cord to dial pointer.

Fig. 19

ALIGNMENT INSTRUCTIONS (TAPE RECORDER)

CONTROL SETTING & PROCEDURE

- Set function selector switch to TAPE.
- Set push button to PLAY and REC at the same time.
- Set power source switch to ON.
- Set power source voltage to 9 volts DC.

(Refer to Fig. 14)

STEP	CIRCUITS	VTVM CONNECTION	RECORD LEVEL CONTROL	ADJUSTMENT	REMARKS
1	AC BIAS OSCILLATOR & ERASE	Connect positive side to test point and negative side to TP1. (Refer to VTVM1 in Fig. 17)	MIN	T ₄ (AC Bias Oscillator) VR ₆ (AC Bias Voltage Control)	Adjust T ₄ for maximum indication of VTVM ₁ Adjust VR ₆ for 8V of VTVM ₁ reading.
2	AC BIAS OSCILLATOR & ERASE	Connect positive side to test point and negative side to VTVM2 to TP2.	MIN	L ₇ (Bias Trap Coil)	Adjust L ₇ for 28.6 mV of VTVM ₂ reading.

RECOMMENDED EQUIPMENT CONNECTIONS

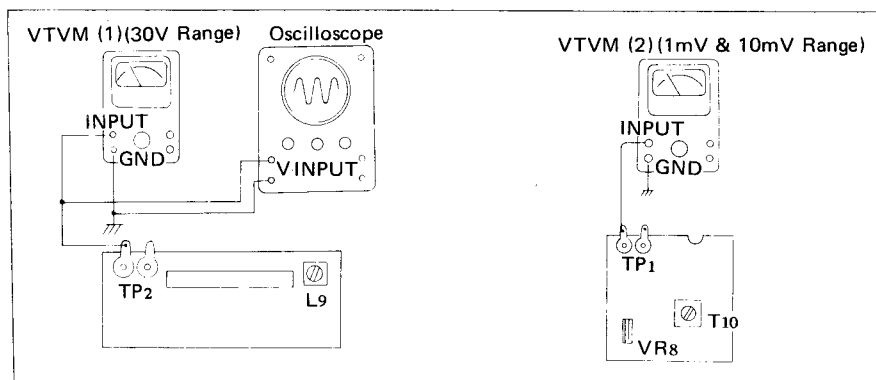


Fig. 20

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

Playback Standard Alignment Tape and turn head adjustment screw so that high range of speaker sound is expanded.

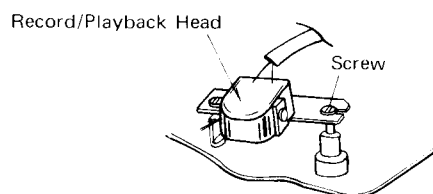


Fig. 21

MECHAICAL ADJUSTMENT - TAPE RECORDER

PINCH ROLLER ADJUSTMENT (Refer to Fig. 22)

1. Switch set to PLAY mode.
2. Suspend spring gauge hold it in direction of arrow.
3. Measure value when pinch roller is detached from capstan.
4. The standard pressure of pinch roller is 350 ± 50 g.
5. If pressure is beyond limits, replace pinch roller spring.

TAKEUP TORQUE ADJUSTMENT

Takeup Torque Measurement with Torque Meter (Refer to Fig. 23)

Equipment Required:

- Torque Meter (having a range of 20 ~ 100 g/cm)
 - Attachment (Take out reel of cassette tape, make 2 holes through its frame, and attach it to the torque meter with wire.)
1. Switch set to PLAY mode and put attachment with the torque meter onto takeup reel.
 2. The standard takeup tension of the takeup reel is 55 ± 20 g cm.

Takeup Torque Measurement with Tension Gauge (Refer to Fig. 24)

Equipment Required:

- Tension Gauge
 - Attachment
1. Switch set to PLAY mode.
 2. Put attachment which is connected to tension gauge by cord (about 30 cm) onto the takeup reel.
 3. To read the number of the tension gauge, move the gauge in direction of arrow without slackening the cord.
 4. The standard takeup tension of the takeup reel is 55 ± 20 g cm.

If the takeup tension is beyond these limits-

- (a) • remove oil and dust to flywheel belt (52) and/or
- (b) • remove oil and stuck to the rubber part of the take-up reel and/or
- (c) • replace takeup lever spring (73) (Refer to Fig. 25) and/or
- (d) • remove rust from pinch roller or replace with new one.

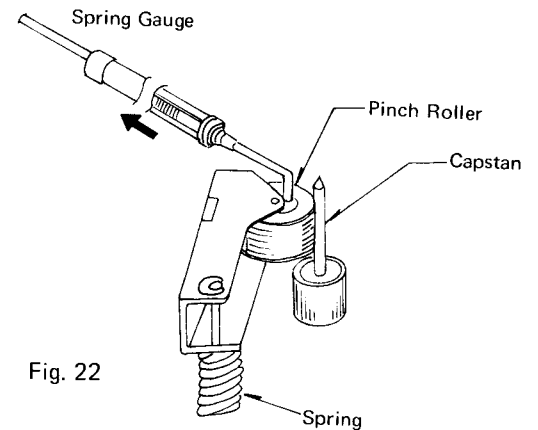


Fig. 22

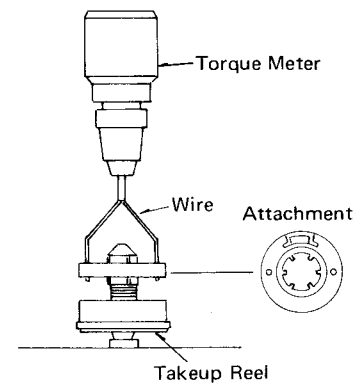


Fig. 23

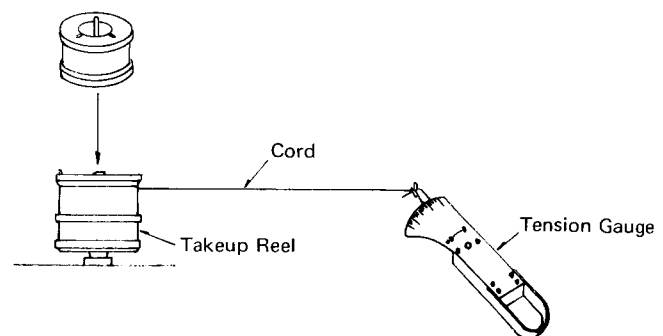


Fig. 24

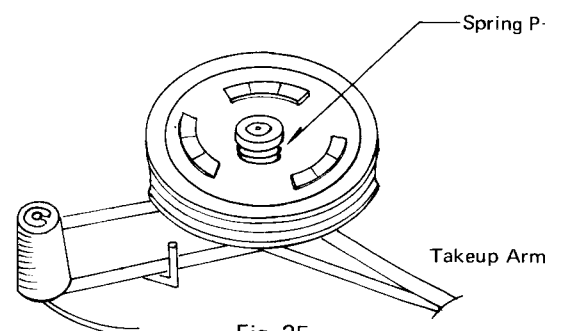


Fig. 25

TAPE TRANSPORT OPERATIONS

PLAYBACK (Refer to Fig. 26)

When play button is pushed, play button lever (4) moves brake operating lever (57). The brake arm (30) to stop both reel is then released.

At this time, brake operating lever brings one spring plate of rest switch into contact with the other, and rest switch is ON.

The set is then in the playback mode. Motor revolutions are transmitted to the flywheel (50) by the belt (52). When takeup arm (68) moves, takeup idler (72) contacts to takeup reel. The takeup reel (34) begins to takeup tape by means of rotation of the takeup arm (68).

At the same time, pinch roller (18) contacts with to capstan in order to start the tape moving.

The playback/record and erase heads (21) contact the surface of the cassette tape. The unit remains in playback mode.

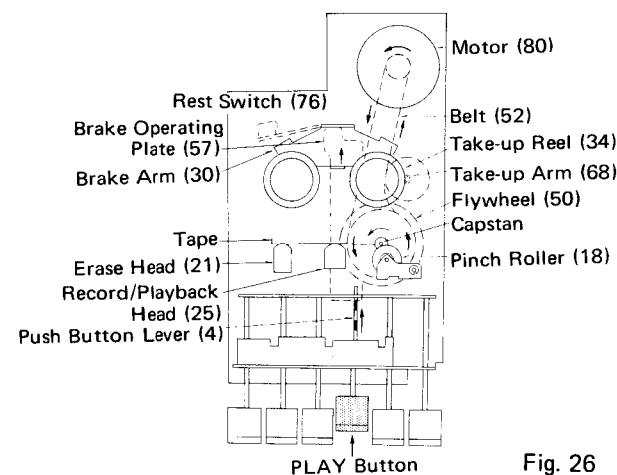


Fig. 26

FAST FORWARD (Refer to Fig. 28)

When FF button is pushed, FF button lever (4) moves FF operating plate (60). Then FF idler arm (58) contacts with flywheel. The rotation of the flywheel is transmitted to FF idler because FF idler has made contact with flywheel and takeup reel. During FF button is pushed, these function.

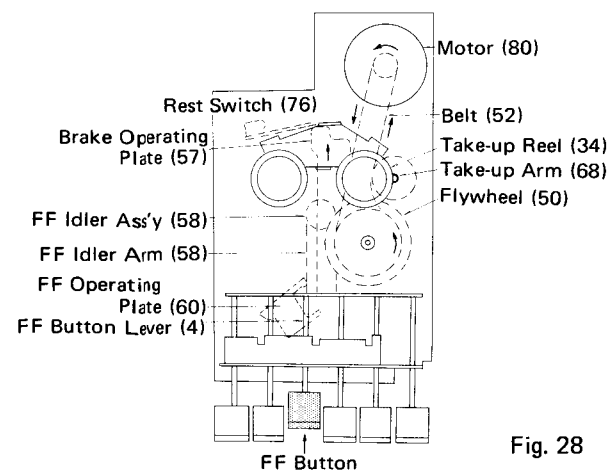


Fig. 28

RECORD (Refer to Fig. 27)

When record and play button are pushed at the same time, play button lever moves brake operating lever.

At this time, brake operating lever brings one spring plate of rest switch into contact with the other, and rest switch ON. REC button lever (4) pushes to the recording position Playback- REC Selector Switch, Operation of the unit is the same as for playback.

Note:

If the tab of cassette tape is removed, record button will not function. In order to record, paper or similar material must be used to make the tab function.

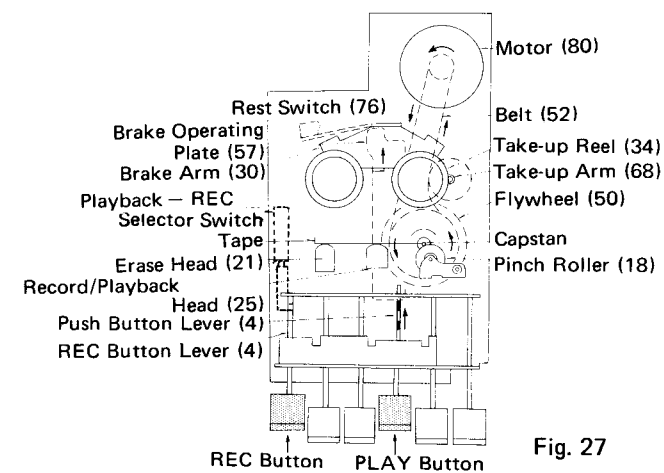


Fig. 27

REWIND (Refer to Fig. 29)

When REW button is pushed, REW arm (62) is pulled to forward (direction of arrow) by spring (63). REW idler (62) contacts with FF idler and supply reel (34).

At the same time, FF idler contacts with flywheel and REW idler.

The rotation of the flywheel is transmitted to REW idler and FF idler. During REW button is pushed, these function.

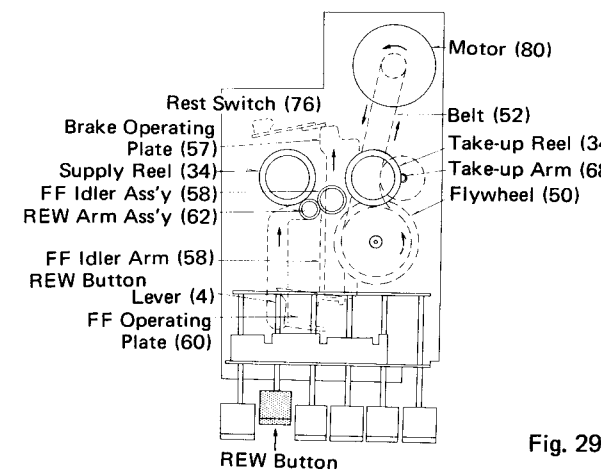


Fig. 29

PARTS IDENTIFICATION - TAPE DECK

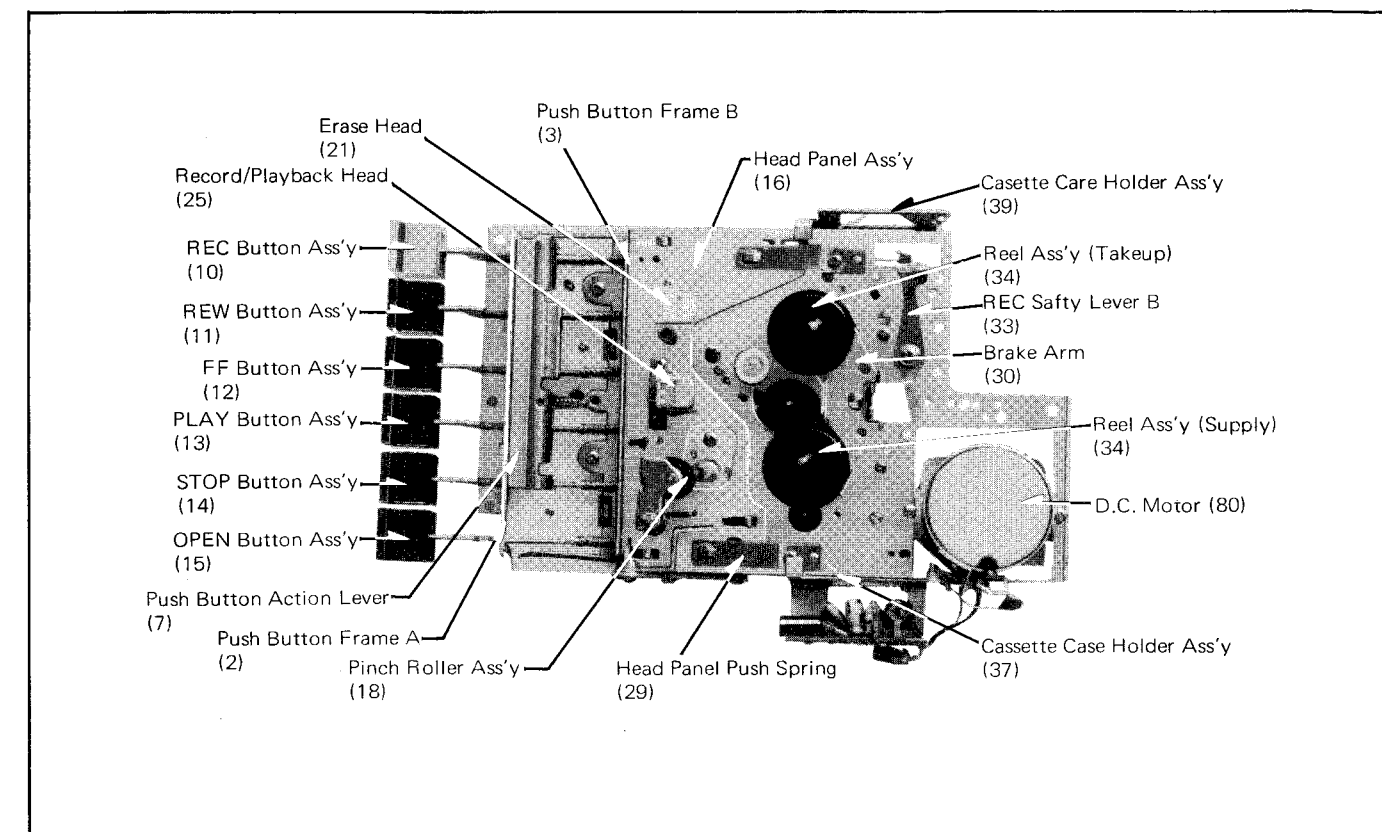


Fig. 30 TOP VIEW

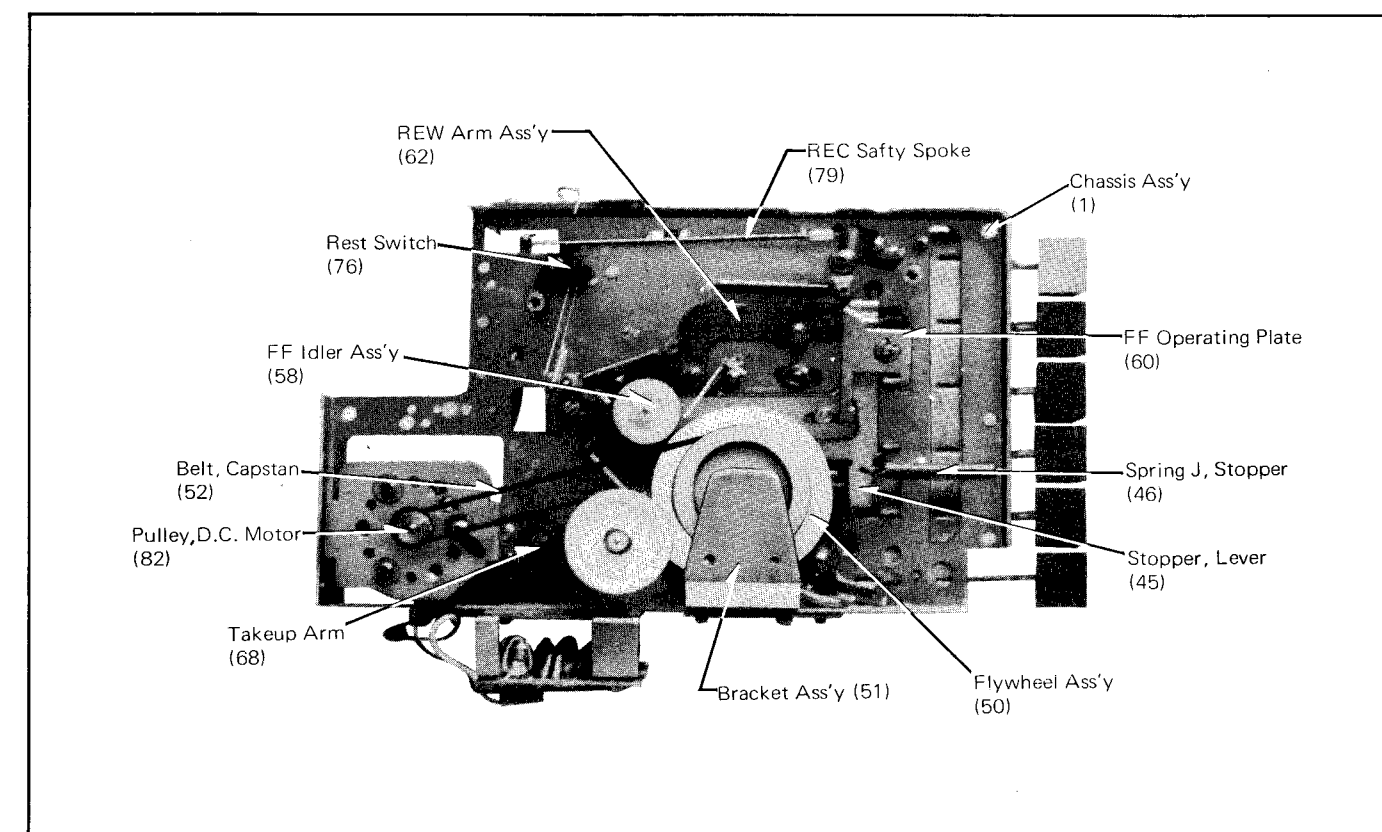


Fig. 31 BOTTOM VIEW

EXPLODED VIEW OF CASSETTE DECK

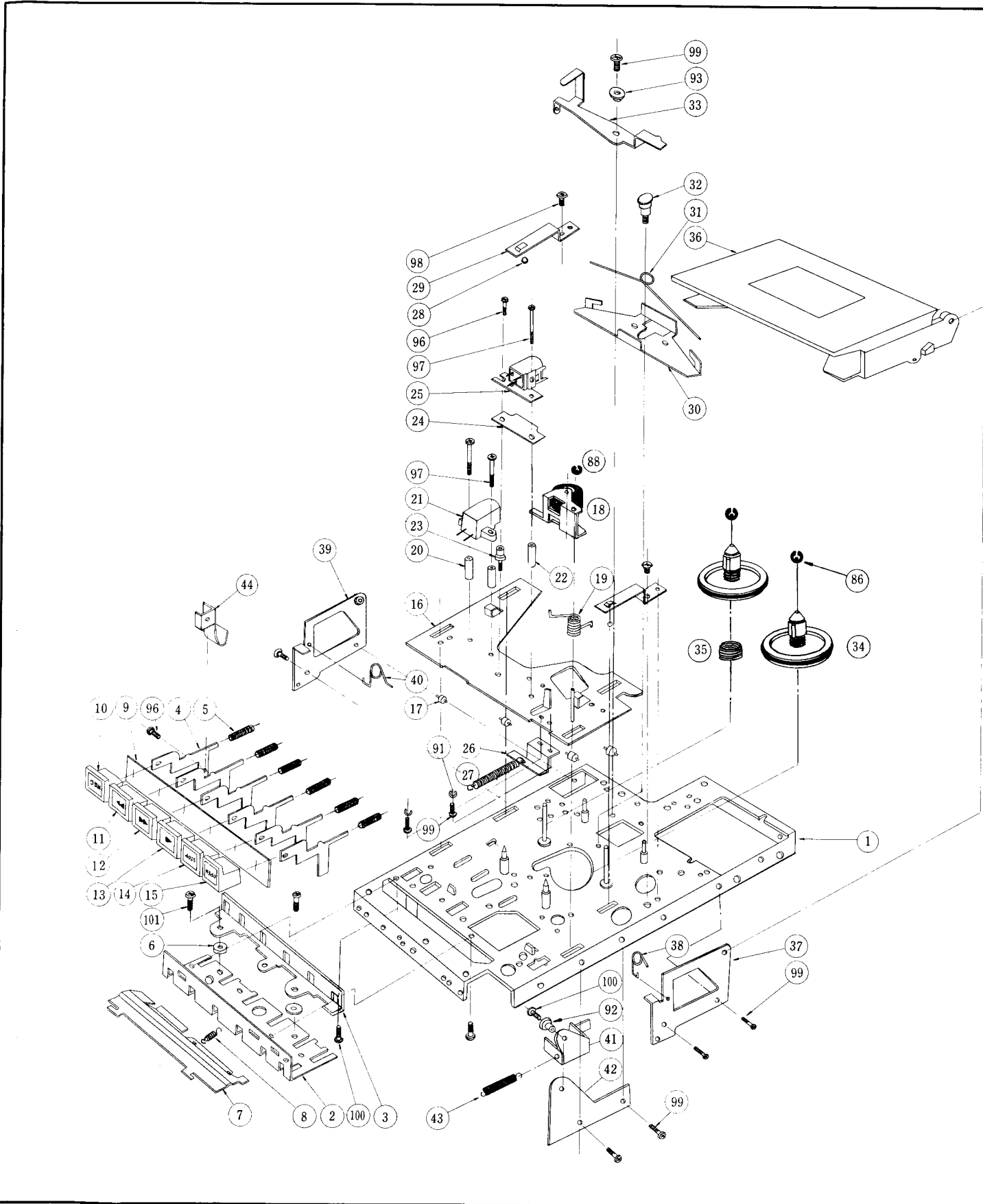


Fig. 32 TOP VIEW

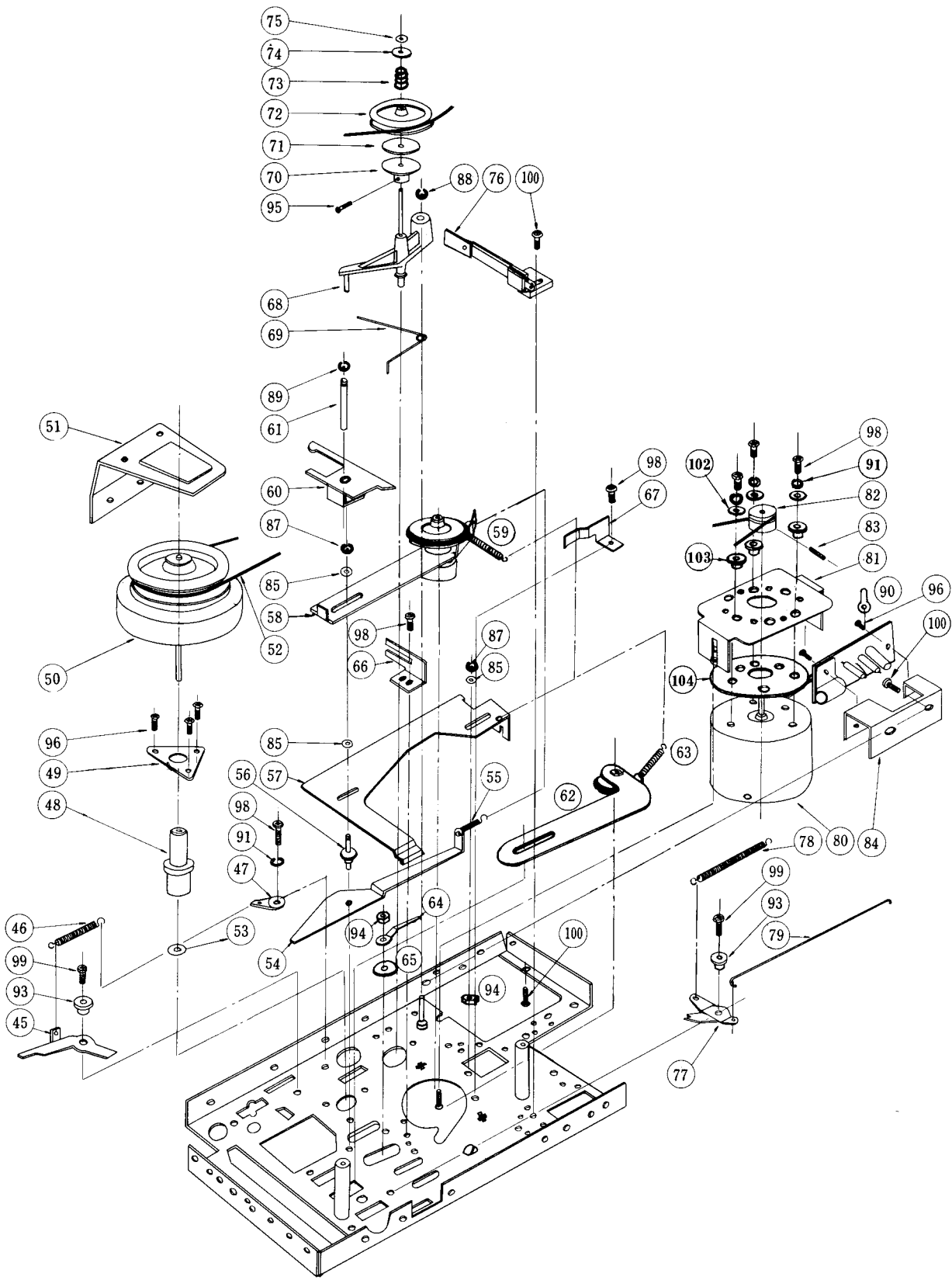


Fig. 33 BOTTOM VIEW

TAPE RECORDER CIRCUITS

1. Recording Circuits

Signal for recording is selected by select switch S_1 -8, S_2 -2 & S_2 -1 and applied to Pre-Amplifier TR_{10} . The recording signal, amplified by TR_{12} & TR_{13} , passes C_{77} , R_{68} , L_9 , and C_{74} , to reach recording head, and is finally recorded on the magnetic tape. R_{48} is used to keep the current in the head constant and to compensate the high frequency range.

As Fig. 34 shows, impedance of the head increases in proportion to the frequency. In order to keep the current in the head constant, output impedance R should either be greatly increased or, if it is low, the signal voltage applied to the head should be increased in proportion to the frequency. R_{68} is used for this purpose. L_9 & C_{74} are resonated to recording (or erasing) bias frequency. L_9 , C_{75} & C_{74} are used to prevent leakage of recording bias current to AF circuits, and to adjust recording bias current.

where : Z =Impedance of Head
 V =Voltage of Head
 i =Current of Head

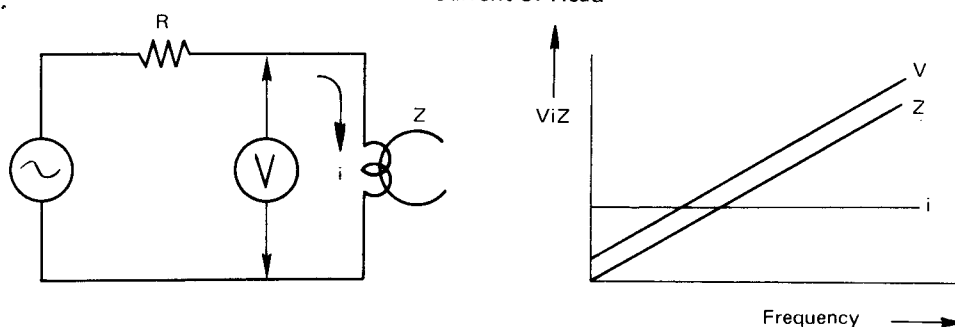


Fig. 34

2. Playback Circuits

The audio signal picked up by the playback head is applied to the audio Pre-Amplifier TR_{10} . Frequency characteristics of the audio signal (which was picked up by the playback head) are boosted in the high frequency range and, therefore, the audio signal needs to be leveled by Equalizer Amplifiers TR_8 , TR_{11} , TR_{12} , and TR_{13} to obtain a flat frequency response. In the Equalizer Amplifier stages, NFB (negative feedback) circuits, consisting of C_{66} , C_{67} , R_{56} , R_{57} are employed to obtain the required equalizing characteristics. The audio signal (with flat frequency response) enters the AF Amplifiers from the Equalizer Amplifiers.

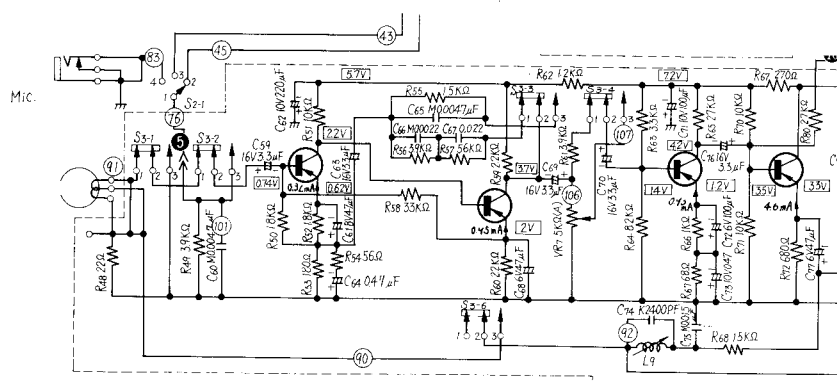


Fig. 35

TAPE RECORDER CIRCUITS

3. AC Bias Oscillator and Erasing Circuits (Refer to Fig. 36)

By employing an AC erasing system, erasing and recording can be accomplished with little distortion or noise.

The AC erasing current required for the erasing head is approximately 130 mA (at both ends of head). If the waveform of the erasing current is distorted, harmonics of the oscillator frequency (about 35 kHz) are radiated by the erasing head winding and picked up by AM ferrite core antenna. These harmonics cause "beat" interference while recording AM broadcasting signals. The tank circuit, which is tuned to 35 kHz, is the collector load TR₁₆, and consists of C₈₃, C₈₄, and inductance of erasing head, and TR₁₆ applies sufficient erasing current to the erasing head with little distortion. An increase of distortion is caused by changes of temperature and line voltage. To prevent deterioration of frequency characteristics, recording level and erasing, a thermistor (TH₂ MT-10K) is employed in the Bias Oscillator stage TR₁₃ and a diode (D₁₅ 1S1121) in the Bias Power Amplifier stage TR₁₆.

In addition, a portion of the erasing bias current is applied to the recording head through capacitor C₈₅.

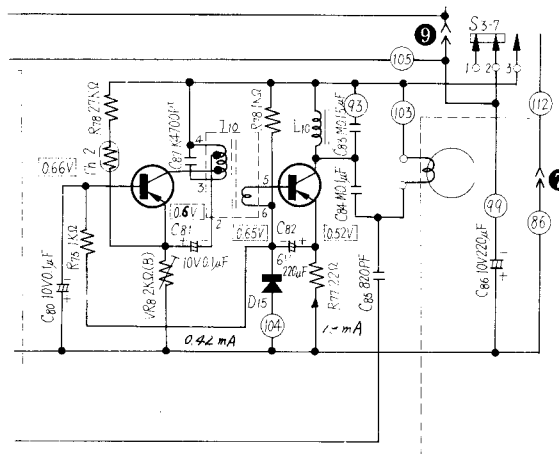


Fig. 36

4. Recording Indicator Circuit (Refer to Fig. 37)

When function selector switch (S₂-1 ~ S₂-6) is set to TAPE, and the REC button pushed, a portion of the recording signals, taken from Equalizer Amplifiers (TR₁₂ & TR₁₃) through capacitor (C₇₈).

A portion of the recording signals is applied to level meter through TR₁₄.

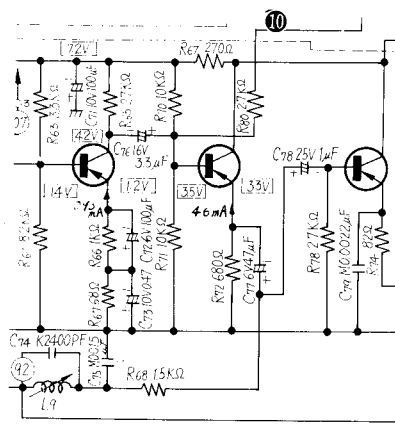


Fig. 37

REPLACING CARTRIDGE AND STYLUS

REPLACING STYLUS (Refer to Fig. 38, 39 and 40)

1. Lift pickup arm to a position that will make stylus accessible.
2. Loosen holding screw and gently remove stylus. (Fig. 38-a)
USE SCREWDRIVER OF CORRECT SIZE.
3. Place the new stylus into position. Be sure stylus lever fits properly into armature. (Figs. 38-b & 38-c)
4. Tighten holding screw no more than is necessary to keep it from shaking loose.

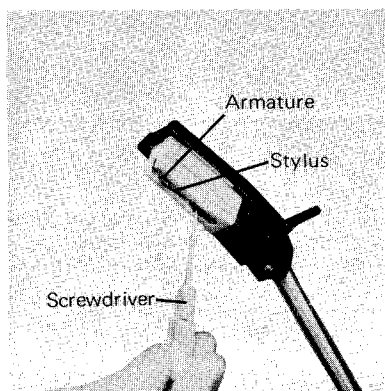


Fig. 38

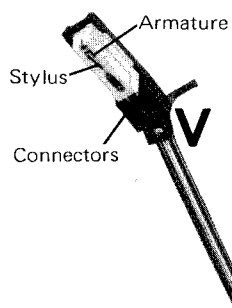


Fig. 39

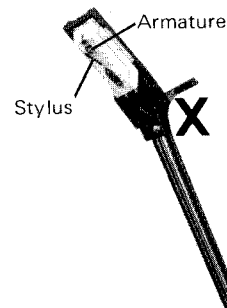


Fig. 40

REPLACING CARTRIDGE (Refer to Fig. 41)

1. Lift pickup arm to a position that will make cartridge accessible.
2. Gently pull cartridge straight down.
3. Disconnect two (2) connectors from cartridge terminals.
4. To install a new cartridge, reverse the above procedure.

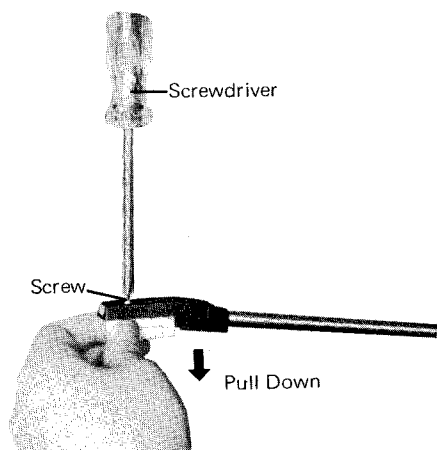


Fig. 41

REPLACEMENT PARTS LIST

Note: ISO metric thread screws & parts which employ ISO metric thread screws are marked: ISO.

REF. No.	PART No.	DESCRIPTION	PER SET (pcs)	REMARKS
TRANSISTORS AND DIODES				
TR1	2SC921	FM RF Amplifier	1	
TR2	2SC920	FM Converter	1	
TR3	2SC829	FM 1st IF Amp. & AM Converter	1	
TR4	2SC829	FM 2nd IF Amp. & AM 1st IF Amp.	1	
TR5	2SC829	FM 3rd IF Amp. & AM 2nd IF Amp.	1	
TR6	2SB346	1st AF Amplifier	1	
TR7	2SB346	2nd AF Amplifier	1	
TR8	2SD72	Power Output	1 pair	
TR9	2SB405	Power Output		
TR10	2SB346	Equalizer Pre-amp.	1	
TR11	2SB175	Equalizer Pre-amp.	1	
TR12	2SB175	Equalizer Amplifier	1	
TR13	2SB175	Equalizer Amplifier	1	
TR14	2SB175	Level Meter Amplifier	1	
TR15	2SB175	AC Bias Oscillator	1	
TR16	2SB324	AC Bias Power Amplifier	1	
D1	0A90	FM Foward AGC	1	
D2	0A90	AM D. AGC	1	
D3	0A90	FM Meter Detector	1	
D6	0A90	FM Discriminator	1 pair	
D7	0A90	FM Discriminator		
D8	0A90	AM Detector	1	
D9	1S1211	AOC	1	
D10	1S1211	AOC	1	
D11	10D-1	AC/Battery Switching	1	
D12	10DC-1R	Rectifier	1	
D15	1S1211	AOC	1	
D16	10D-1	AC Lamp Switching	1	
THERMISTORS				
TH1	ERT-D3FFK350S	Temperature Compensator	1	
TH2	MT-10K	Temperature Compensator	1	
INDICATOR				
	SSM-2	Level Meter	1	

REPLACEMENT PARTS LIST (Cont'd)

REF. No.	PART No.	DESCRIPTION	PER SET (pcs)	REMARKS
COILS AND TRANSFORMERS				
L1	ELQ-5A9	FM Antenna Coil	1	
L2	ELD-5N302	FM Det. Coil	1	
L3	ELQ-5AQ	IF Trap Coil	1	
L4	SLO-5N2	FM Oscillator Coil . . . SA	1	New
	ELL-5N305	FM Oscillator Coil	1	
L5 & L6	SLF-5F10	Ferrite Antenna Coil (MW & SW) . . . SA	1	New
	SLF-5F12	Ferrite Antenna Coil (MW & SW)	1	New
L7	SLO-2P4	MW Oscillator Coil	1	New
L8	SLO-3P10	SW Oscillator Coil . . . SA	1	New
	SLO-3P6	SW Oscillator Coil	1	
L9	RLQ-C542-T	Trap Coil	1	
L10	SLT-6E2-D	Choke Coil	1	
L11	SLT-6G2-D	Choke Coil	1	
L12 & L13	ELQ-250A999	Noise Filter Coil	2	
T1	SLI-4B102	FM 1st IFT . . . Primary	1	New
T2	SLI-4B202	FM 1st IFT . . . Secondary	1	New
T3	SLI-4B202	FM 2nd IFT	1	New
T4	SLI-4B302	FM 3rd IFT	1	New
T5	SLI-4B502	FM Disc. IFT	1	New
T6	SLI-4B504	FM Disc. IFT	1	New
T7	SLI-2B102	AM 1st IFT	1	New
T8	SLI-2B202	AM 2nd IFT	1	New
T9	SLI-2B402	AM Det. IFT	1	New
T10	RLO-9C2-T	AC Bias OSC	1	New
T11	SLT-5J8D	Power Transformer	1	
COMPONENT COMBINATIONS				
M1	EXA-F203Z471	470 Ω , 0.02 μ FZ (two) (AM)	1	
M2	EXA-5DL04C	4.7k Ω , 330pF (three) (FM)	1	
RESISTORS				
R10	ERD-14VJ100	10 Ω 1/4 Watt $\pm$ 5% Carbon	1	
R48, 77	ERD-14VJ220	22 Ω 1/4 Watt $\pm$ 5% Carbon	2	
R43	ERD-14VJ470	47 Ω 1/4 Watt $\pm$ 5% Carbon	1	
R2	ERD-14VJ560	56 Ω 1/4 Watt $\pm$ 5% Carbon	1	
R67	ERD-14VJ680	68 Ω 1/4 Watt $\pm$ 5% Carbon	1	
R74	ERD-14VJ820	82 Ω 1/4 Watt $\pm$ 5% Carbon	1	

REPLACEMENT PARTS LIST (Cont'd)

REF. No.	PART No.	DESCRIPTION				PER SET (pcs)	REMARKS
R7, 13, 11, 19	ERD-14VJ101	100 Ω	1/4 Watt	$\pm 5\%$	Carbon	4	SA
R7, 13, 19	ERD-14VJ101	100 Ω	1/4 Watt	$\pm 5\%$	Carbon	3	
R53	ERD-14VJ181	180 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R17, 23	ERD-14VJ221	220 Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R44, 69	ERD-14VJ271	270 Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R22	ERD-14VJ331	330 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R30	ERD-14VJ391	390 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R14, 18	ERD-14VJ471	470 Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R72	ERD-14VJ681	680 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R3, 6, 12, 24 25, 41, 42, 66, 75, 78	ERD-14VJ102	1k Ω	1/4 Watt	$\pm 5\%$	Carbon	10	
R62	ERD-14VJ122	1.2k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R16, 68	ERD-14VJ152	1.5k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R4, 52	ERD-14VJ182	1.8k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R20, 34, 40 59, 60	ERD-14VJ222	2.2k Ω	1/4 Watt	$\pm 5\%$	Carbon	5	
R65, 73	ERD-14VJ272	2.7k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R5, 8, 15, 81	ERD-14VJ332	3.3k Ω	1/4 Watt	$\pm 5\%$	Carbon	4	
R9, 49, 56, 61	ERD-14VJ392	3.9k Ω	1/4 Watt	$\pm 5\%$	Carbon	4	
R32, 84	ERD-14VJ472	4.7k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R64	ERD-14VJ822	8.2k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R28, 37, 39 51, 70, 71	ERD-14VJ103	10k Ω	1/4 Watt	$\pm 5\%$	Carbon	6	
R1, 55	ERD-14VJ153	15k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R50	ERD-14VJ183	18k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R33, 76, 80	ERD-14VJ273	27k Ω	1/4 Watt	$\pm 5\%$	Carbon	3	
R58, 63	ERD-14VJ333	33k Ω	1/4 Watt	$\pm 5\%$	Carbon	2	
R79	ERD-14VJ473	47k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R29, 31, 38, 57	ERD-14VJ563	56k Ω	1/4 Watt	$\pm 5\%$	Carbon	4	
R82	ERD-14VJ224	220k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R35	ERD-14VJ274	270k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R36	ERD-14VJ474	470k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R47	ERD-14TJ150	15 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R54	ERD-14TJ560	56 Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R21	ERD-14TJ472	4.7k Ω	1/4 Watt	$\pm 5\%$	Carbon	1	
R46	ERM-12PK1R5	1.5 Ω	1/2 Watt	$\pm 10\%$	Wire	1	
R45	ERM-12PK0R47	0.47 Ω	1/2 Watt	$\pm 10\%$	Wire	1	

REPLACEMENT PARTS LIST (Cont'd)

REF. No.	PART No.	DESCRIPTION					PER SET (pcs)	REMARKS
CAPACITORS								
C12, 18, 30	ECC-D05010C	1pF	50WV	±0.25pF	Ceramic	3		
C27	ECC-D05030C	3pF	50WV	±0.25pF	Ceramic	1		
C1, 5, 22	ECC-D05040C	4pF	50WV	±0.5pF	Ceramic	3		
C15	ECC-D05050C	5pF	50WV	±0.25pF	Ceramic	1		
C11, 13	ECC-D05070D	7pF	50WV	±0.5pF	Ceramic	2	... SA	
C11	ECC-D05070D	7pF	50WV	±0.5pF	Ceramic	1		
C13	ECC-D05150K	15pF	50WV	±10%	Ceramic	1		
C3	ECC-D05180K	18pF	50WV	±10%	Ceramic	1		
C6	ECC-D05390K	39pF	50WV	±10%	Ceramic	1		
C32	ECC-D05470K	47pF	50WV	±10%	Ceramic	1		
C40, 41	ECC-D05101K	100pF	50WV	±10%	Ceramic	2		
C79	ECK-D05222MY	0.0022μF	50WV	±20%	Ceramic	1		
C19, 37	ECK-D05472MY	0.0047μF	50WV	±20%	Ceramic	2		
C2, 8	ECK-D05102MY	0.001μF	50WV	±20%	Ceramic	2		
C16, 17	ECK-D05103MY	0.01μF	50WV	±20%	Ceramic	2		
C26, 87	ECK-D05223MY	0.022μF	50WV	±20%	Ceramic	2		
C9, 14, 54, 55	ECK-D05103ZV	0.01μF	50WV	+80% -20%	Ceramic	4		
C23, 24, 28 31, 88	ECK-D05223ZV	0.022μF	50WV	+80% -20%	Ceramic	5		
C20	ECQ-S05301JZ	300pF	50WV	±5%	Styrol	1		
C90	ECQ-S05361KZ	360pF	50WV	±10%	Styrol	1		
C7	ECQ-S05331KZ	330pF	50WV	±10%	Styrol	1		
C49	ECQ-S05681KZ	680pF	50WV	±10%	Styrol	1		
C85	ECQ-S05821KZ	820pF	50WV	±10%	Styrol	1		
C21	ECQ-S05222KZ	2200pF	50WV	±10%	Styrol	1	... SA	
C21	ECQ-S05332KZ	3300pF	50WV	±10%	Styrol	1		
C74	ECQ-S05242KZ	2400pF	50WV	±10%	Styrol	1		
C87	ECQ-S05472KZ	4700pF	50WV	±10%	Styrol	1		
C66	ECQ-M05222MZ	0.0022μF	50WV	±20%	Polyester	1		
C60, 65	ECQ-M05472MZ	0.0047μF	50WV	±20%	Polyester	2		
C75	ECQ-M05153MZ	0.015μF	50WV	±20%	Polyester	1		
C84	ECQ-M05104MZ	0.1μF	50WV	±20%	Polyester	1		
C83	ECQ-M05154MZ	0.15μF	50WV	±20%	Polyester	1		
C48, 67	ECQ-M05223MZ	0.022μF	50WV	±20%	Polyester	1		
C29	UKD-12J223M	0.022μF	50WV	±20%	Ceramic	1		
C10, 47, 78	ECE-A25V1N	1μF	25WV	Electrolytic		3		

REPLACEMENT PARTS LIST (Cont'd)

REF. No.	PART No.	DESCRIPTION			PER SET (pcs)	REMARKS
C59, 63, 69 70, 76	ECE-A16V3R3N	3.3μF	16WV	Electrolytic	5	
C25	ECE-A6V33N	33μF	6WV	Electrolytic	1	
C61, 68, 77	ECE-A6V47N	47μF	6WV	Electrolytic	3	
C4, 46, 72	ECE-A6V100N	100μF	6WV	Electrolytic	3	
C38, 82	ECE-A6V220N	220μF	6WV	Electrolytic	2	
C39,50,62,86	ECE-A10V220N	220μF	10WV	Electrolytic	4	
C45	ECE-A10V47N	47μF	10WV	Electrolytic	1	
C71	ECE-A10V100N	100μF	10WV	Electrolytic	1	
C33	ECE-B16V4R7N	4.7μF	16WV	Electrolytic	1	
C42, 57	ECE-B12V220N	220μF	10WV	Electrolytic	2	
C53	ECE-B16V1000N	1000μF	16WV	Electrolytic	1	
C52	ECE-B16V2200	2200μF	16WV	Electrolytic	1	
C51	ECE-B25Y3R3	3.3μF	25WV	Electrolytic	1	
C43, 44	AL-10V1M	1μF	10WV	Electrolytic	2	
C80, 81	AL-10V0.1M	0.1μF	10WV	Electrolytic	2	
C64, 73	AL-10V0.47M	0.47μF	10WV	Electrolytic	2	
C56	FM-501K	500pF	500WV	Polyester	1	
VARIABLE RESISTORS						
VR1	EVL-T0AA00B15	100kΩ, FM Tuning Level Control			1	
VR2	EVL-T0AA00B53	5kΩ, AM Tuning Level Control			1	
VR3	EVL-T0AA00B55	500kΩ, Howl Adjust			1	
VR4	EVC-B1AL20D54	50kΩ, Volume Control			1	
VR5	EVC-B1AL20D54	50kΩ, Tone Control			1	
VR6	EVL-T0AA00B25	200kΩ, Amp. Balance			1	
VR7	EVH-B0AL15A53	5kΩ, Level Control			1	
VR8	EVL-T0AA00B23	2kΩ, AC Bias Voltage Control			1	
VARIABLE CAPACITORS						
CT1 ~ 2	PVC-2AF0038	Tuning Capacitor			1	
CT3 ~ 4	TD41RN10	Trimmer Capacitor			1	
SWITCHES						
S1	ESR-E3C3L20BE	Band Selector Switch			1	
S2	ESR-E283L20AE	Function Selector Switch			1	
S3	SSH-8	Playback-LEC Selector Switch			1	
S4	SJE-34	Motor ON-OFF Switch			1	
S5	SWS-10	Motor ON-OFF Switch Ass'y			1	
S6	SST-8	Power Switch			1	

REPLACEMENT PARTS LIST (Cont'd)

REF. No.	PART No.	DESCRIPTION	PER SET (pcs)	REMARKS
S8	SSS-24	Speed Selector Switch	1	
SPEAKERS				
SP1	EAS-10P02S	10 cm PM Dynamic 4 Ω ,	1	
SP2	EAS-65PH34SB	6.5 cm PM Dynamic 8 Ω ,	1	
MOTOR AND PLAYER				
	FF-553D	Phonomotor with Governor Circuit	1	
	MHE-5BD	Motor with Governor Circuit	1	
	FF-TLW004	Circlip	1	
	SYE-10	Turntable with Mat with Trim	1	
	EPU-65LTA	Pickup with Cartridge	1	
	EPS-70LTC	Cartridge with Stylus	1	
	EPS-04LP	Stylus, Sappire	1	
MISCELLANEOUS				
	SDP-528	Pointer, Dial	1	
	SHR-696	Cushion, Level Meter	1	
	SJC-514	Battery Spring	2	
	SJC-118	Battery Terminal	2	
	SMY-40	Heat Sink	1	
	SMY-448	Heat Sink	1	ISO
	SMY-22	Heat Sink	1	
	SME-32S	Rest Lever	1	ISO
	SMN-182	Jack Holder	1	
	RDD-60-1	Dial Drum	1	
	RDS-417	Drum Spring	1	
	SDT-6184	Tuning Shaft	1	
	RDY-8	Pulley Shaft	2	
	RDR-8	Pulley	5	
	RDR-14	Pulley	1	
	SJK-5310	Battery Pipe	2	
	SUW-324	Bracket, Speaker	3	
	SHK-26S	Stud	1	ISO
	RVL-212-2	Pilot Lamp	1	
	SJJ-4	Earphone Jack	1	
	SJJ-28	Microphone Jack	1	
	SJJ-14	16 Pin Circuit Board Connector	1	
	RJP-14	Plug, Power Source Selector	1	

REPLACEMENT PARTS LIST (Cont'd)

PART No.	DESCRIPTION & REMARKS	
CABINET		
SKM-2140S*	Body (150)	Body, Complete (SYK-526) (150)
SKM-2160	Side Board A	
SKM-2180	Side Board B	
SKM-2200	Top Board	
SYH-10S	Handle Ass'y (150)	
SKE-74	Pickup Holder	
SUW-326S	Bracket, Top Board (150)	
SUW-328S	Bracket, Body (150)	
SUW-330S	Bracket, Side Board (150)	
SBE-126	Holder, Lock	
SGW-1720	Side Panel	
SGB-316	Badge B	
SGS-72	Dirt Protector Sheet	
SKM-2240S*	Player Box (150)	Player Box, Complete (SYK-548S) (150)
SYE-38	Lock Ass'y	
SBH-3014S	Hinge (150)	
SHR-694	Cushion, Hinge	
SGX-472	Trim A, Player Box	
SGX-474	Trim B, Player Box	
SGX-498	Trim C, Player Box	
SGB-320	Badge D	
SGB-2	N Badge	
SGS-934	Dirt Protector Sheet	
SKM-2220S*	Motor Board (150)	Motor Board, Complete (SYK-522S) (150)
SGB-918	Badge C	
SHS-928	Dirt Protector Sheet A	
SHS-930	Dirt Protector Sheet B	
SHS-932	Dirt Protector Sheet C	
SGX-470	Trim	Rear Cover Complete (SYK-628) . . . SA (SYK-622)
SKF-1120*	Rear Cover	
SKK-70	Battery Compartment Cover	
SKE-176	Cord Compartment Cover	
SBC-28	Button, Battery & Cord Cover	
SUS-26	Spring, Battery & Cord Cover	Escutcheon, Complete (SYK-638S) SA (150) (SYK-624S) (150)
SHS-926	Dirt Protector Sheet	
SGN-380	Specification Plate SA	
SGN-382	Specification Plate	
SYP-22	Dial Ass'y SA	
SYP-20	Dial Ass'y	Escutcheon, Complete (SYK-638S) SA (150) (SYK-624S) (150)
SGL-22	Panel Light	
SGX-504	Trim A, Escutcheon	
SGX-480	Trim B, Escutcheon	
SGX-482	Trim C, Escutcheon	Cabinet, Complete (SYK-630S) (150) (SYK-626S) (150) . . . SA
SGW-1700S*	Escutcheon (150)	

Note: Marked "*" parts in the above are to be ordered in the form assembly.

CASSETTE TAPE RECORDER REPLACEMENT PARTS LIST

REF. No.	PART No.	Q'TY	DESCRIPTION	REF. No.	PART No.	Q'TY	DESCRIPTION
1	SMQ-2	1	Chassis Ass'y	55	SMQ-72	1	Spring K, Actuating Lever "FF"
2	SMQ-14	1	Push Button Frame A	56	SMQ-60	1	Shaft B, Brake Operating Plate
3	SMQ-20	1	Push Button Frame B	57	SMQ-62	1	Brake Operating Plate
4	SMQ-16	6	Push Button Lever	58	SMQ-66	1	FF Idler Ass'y
5	SMQ-18	6	Spring A, Push Button Lever	59	SMQ-74	1	Spring L
6	SMQ-22	2	Button Collar	60	SMQ-102	1	FF Operating Plate
7	SMQ-24	1	Push Button Action Lever	61	SMQ-104	1	Shaft C, FF Operating Plate
8	SMQ-26	1	Spring B, Push Button Action Lever	62	SMQ-90	1	REW Arm Ass'y
9	SGS-188	1	Dirt Protector Sheet, Cassette Lever	63	SMQ-92	1	Spring M, REW Arm Ass'y
10	SGE-246	1	Button Ass'y "REC"	64	SMQ-70	1	Plate Spring B, REW Arm Ass'y
11	SGE-244	1	Button Ass'y "REW"	65	XWE-26E8	1	Washer, 2.6
12	SGE-242	1	Button Ass'y "FF"	66	SMQ-86	1	Holding Plate, FF Idler Ass'y
13	SGE-240	1	Button Ass'y "PLAY"	67	SMQ-88	1	Plate Spring C, FF Idler
14	SGE-238	1	Button Ass'y "STOP"	68	SMQ-108	1	Takeup Arm
15	SGE-236	1	Button Ass'y "OPEN"	69	SMQ-106	1	Spring N, Takeup Pulley
16	SMQ-281	1	Head Panel Ass'y	70	SMQ-110	1	Clutch Wheel
17	SMQ-301	4	Pulley A, Head Panel	71	SMQ-112	1	Clutch Felt
18	SMQ-38	1	Pinch Roller Ass'y	72	SMQ-114	1	Takeup Idler
19	SMQ-34	1	Spring C, Pinch Roller Ass'y	73	SMQ-116	1	Spring O, Takeup Idler
20	SMQ-42	2	Stud A	74	SMQ-118	1	Cap, Takeup Idler
21	WY-223Z	1	Erase Head	75	SMQ-120	1	Washer, Cap
22	SMQ-44	1	Stud B, Record-Playback Head	76	SMQ-122	1	Rest Switch
23	SMQ-46	1	Stud C, Record-Playback Head	77	SMQ-152	1	REC Safety Lever A
24	SMQ-48	1	Plate Spring A	78	SMQ-154	1	Spring P, REC Safety Lever A
25	WY-027Z	1	Record/Playback Head	79	SMQ-158	1	REC Safety Spoke
26	SMQ-50	1	Head Panel Action Bracket	80	MHE-5SD9S2	1	DC Motor
27	SMQ-52	1	Spring D, Head Panel Action Bracket	81	SMQ-196	1	Bracket C, DC Motor
28	SMQ-54	2	Bearing	82	SMQ-198	1	Pulley, DC Motor
29	SMQ-56	2	Head Panel Push Spring	83	XXA2A-3	1	Screw A, DC Motor
30	SMQ-164	1	Brake Arm	84	SUW-368	1	DC Motor Mounting Bracket
31	SMQ-166	1	Spring E, Brake Arm	85	SMQ-64	3	2φ Nylon Washer
32	SMQ-168	1	Pivot, Brake Arm	86	SNT-440	2	Circlip 1.2 m/m
33	SMQ-160	1	REC Safety Lever B	87	SNT-442	3	Circlip 1.5 m/m
34	SMQ-170	2	Reel Ass'y	88	SNT-444	2	Circlip 1.9 m/m
35	SMQ-186	1	Spring F, Reel	89	SNT-446	1	Circlip 2.3 m/m
36	SYE-54	1	Cassette Case Ass'y	90	SMQ-204	1	Lug B
37	SMQ-180	1	Cassette Case Holder Ass'y (R)	91	XWA26B	6	Spring Washer
38	SMQ-200	1	Spring G, Cassette Case	92	SMQ-190	1	Spacer A
39	SMQ-184	1	Cassette Case Holder Ass'y (L)	93	SMQ-162	2	Spacer B
40	SMQ-202	1	Spring H, Cassette Case	94	XNG-26B	2	Nut 2.6 m/m
41	SMQ-188	1	Pop-up Lever	95	XSN17+4	1	Screw 1.7 mm x 4
42	SMQ-192	1	Bracket A, Pop-up Lever	96	XSN2+5	7	Screw 2 mm x 5
43	SMQ-194	1	Spring I, Pop-up Lever	97	XSN2+12	3	Screw 2 mm x 12
44	SXE-10	1	Switch Holding Spring Ass'y	98	XSN26+3	7	Screw 2.6 mm x 3
45	SMQ-142	1	Stopper, Lever (OPEN)	99	XSN26+4	8	Screw 2.6 mm x 4
46	SMQ-146	1	Spring J, Stopper	100	XSN26+6	7	Screw 2.6 mm x 6
47	SMQ-150	1	Lug	101	XSN26+8	2	Screw 2.6 mm x 8
48	SMQ-124	1	Shaft A, Flywheel	102	XWE26A5	1	Washer
49	SMQ-126	1	Bracket B, Shaft A	103	SMX-26	1	Insulated Sleeve
50	SMQ-128	1	Flywheel Ass'y	104	SMX-24	1	Insulated Sheet, Motor
51	SMQ-134	1	Bracket Ass'y				
52	SMQ-140	1	Belt, Capstan				
53	SMQ-148	1	Washer, Oil Thrower				
54	SMQ-58	1	Actuating Lever "FF"				
55	SMQ-72	1	Spring K, Actuating Lever				